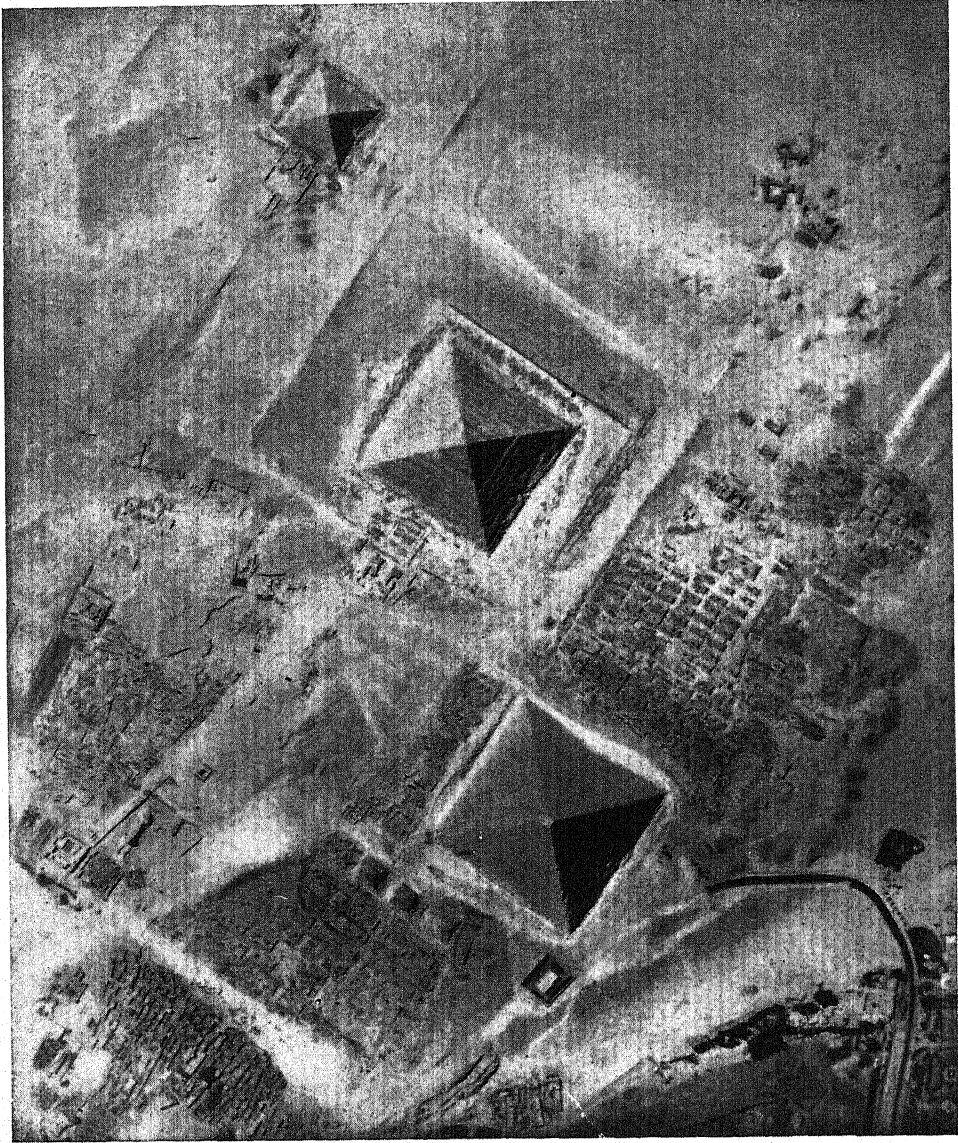


EGYPTIAN PYRAMIDS

PLATE I



PYRAMIDS OF GIZA: Vertical Air-photograph

R.A.F. Official

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frontispiece

EGYPTIAN PYRAMIDS

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Preface

THIS work has resulted from the writer's spare-time activities from January, 1942, to November, 1945, while on service in the Middle East. It is designed to provide a short but adequate account of the pyramids of Lower Egypt, in plain language, for all who are interested, including Egyptologists and intelligent sightseers. Although largely a synthesis based on the labours and writings of others, it embodies a good deal of personal investigation and study through repeatedly visiting the monuments themselves.

For library facilities while in Egypt, the writer is indebted to the staff of l'Institut Français d'Archéologie Orientale du Caire, and the staff of the Library of the Egyptian Museum, Cairo.

Portions of this work have benefited from criticism by the late Mr R. Engelbach (sometime Director of the Egyptian Museum, Cairo); Dr Iskander Badawy (lecturer in Egyptology, University of Fouad I, Cairo); Mr J-P Lauer, Mr J. Leibovitch, Mr H. W. Fairman, and many others, to all of whom the writer's thanks are here accorded. The chapter on the Pyramid Texts has been revised by Prof. Battiscombe Gunn, who also gave valuable advice on the spelling of Egyptian personal names.

For permission to reproduce the air-photographs taken by the Royal Air Force, Middle East, the author is indebted to the authorities at Headquarters, Royal Air Force, MED.ME. He is equally indebted to the authorities at Headquarters, Royal Egyptian Air Force, for supplying air-photographs taken by them and granting permission to reproduce them.

He is indebted to Messrs A. F. Kersting, T. Herbert Jones, C. Reid, E. F. S. Draper, and W. Whitbourn for the photographs which appear above their names.

The reconstruction drawing of a typical pyramid under construction (Fig. 7) was performed to the author's specification by Mr W. W. Luker.

The section on stone quarrying has benefited from discussion with Fuad Henein Eff., Inspector of Egyptian quarries.

Several R.A.F. colleagues, especially Messrs W. W. Inge and P. Kyan, rendered valuable assistance in reading the German and Italian literature on the subject.

Finally, the writer offers this work as a small thank-offering to the Egyptian people for their courtesy and helpfulness while he was pursuing his studies in Egypt between 1942 and 1945.

Bill Fawcett 16.00. 10-10-49

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PART I

ASPECTS OF PYRAMID STUDY

CHAPTER I

Introduction

Concerning Egypt itself I shall extend my remarks to a great length, because there is no country that possesses so many wonders, nor any that has such a number of works which defy description.'

HERODOTUS. *History*, II, 35.

'Among the wonders of that country are the Pyramids, which have attracted the attention of many authors . . . The form of the Pyramids, and their extreme solidity, are indeed well worthy of admiration and have enabled them to resist the effects of time for so many ages, that it might almost be considered that it is Time, that experiences the eternal duration of these extraordinary edifices.'

ABD-EL-LATIF. *Account of Egypt*, Book I, Chapter 4.

I. PRELIMINARY OBSERVATIONS.

The practice of burying the dead beneath vast heaps of stone or earth has existed in most parts of the world, and during many periods. The Barrows of Britain, the Tertres Funéraires of France, the Hôgar of Scandinavia, the Hünen-gräber of Germany, the Tombe dei Giganti of Sardinia, and the Vaulted Tombs of the Aegean—these are only a few of what may be called the European counterparts of the pyramids.

The origins of the custom are probably to be found in the desire of humanity to perpetuate the memory of their illustrious dead, as well as in that almost world-wide fear of the dead, the evidence for which has been so well collected and narrated by the late Sir James Frazer.¹

The following differences in function between the pyramids of Egypt and the prehistoric barrows of Europe should however be noted :

- (a) whereas barrows often have primary, secondary, and alien burials, pyramids normally contain only one burial;
- (b) pyramids of the Old and Middle Kingdoms were normally confined to the burial of royalty, whereas barrows were not;
- (c) religious observances and the cult of the dead played a much more prominent part in pyramids and their associated structures than in barrows;
- (d) preservation of the body appears to have assumed a greater importance in Egypt than elsewhere.

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II. PYRAMIDS IN GENERAL.

The etymology of the word pyramid is uncertain. F. Ll. Griffith² and others have suggested a derivation from ancient Egyptian *pr-m-ws*, used in the Rhind Mathematical Papyrus for the vertical height of a pyramid. The *Oxford English Dictionary* states that the word 'is perhaps of Egyptian origin, but anciently explained by some as a derivative of $\pi\nu\rho$ =fire.'

An Egyptian pyramid may be defined as a sepulchral or religious edifice of stone or brick with a square or nearly square base and sloping triangular sides meeting at an apex.

No definition can be all-embracing. The Step Pyramid of Saqqâra for example stands on an oblong base; and pyramids with stepped sides can only at a stretch be described as having sloping sides meeting at an apex. It is probable that some of the small examples did not cover tombs but were places of offerings, or temporary resting places for the deceased pending completion of his tomb.

The sepulchral purpose of a pyramid should be given a wide meaning, to include a cenotaph and a tomb for the spirit or *ka* as well as a temporary or permanent tomb for mortal remains.

Three of the ancient Egyptian kings appear each to have had two pyramids or tombs. Snefru had a pyramid at Maidûm and another at Dahshûr; Sesostriis III had a pyramid at Dahshûr and a rock tomb at Abydos, and Ammenemes III built one pyramid at Hawâra in the Faiyûm and another at Dahshûr. The reason for this duplication of tombs is not known; but it may indicate a practice, during parts of Dynasties III and XII and probably at other times, of building one tomb in Upper and one in Lower Egypt, as the duality of the Kingdom was stressed in many ways. If this is the correct explanation, then the king was most likely laid to rest temporarily in one tomb before being transferred to his permanent resting place in the other. In any case there would have been an advantage in providing the king's spirit with a habitat in each kingdom.

All the Egyptian pyramids known to be of Old or Middle Kingdom are on the desert edge just West of the West bank of the Nile. It is natural that the sterile desert sand which is of no agricultural value should have been used for the siting of tombs and temples.

The land of the dead was certainly called the land of the westerners, or the western necropolis; and there can surely be little doubt that the use of the west side of the Nile was due to an ancient Egyptian mental association of life's decline with the setting of the sun. As for the fertile valley of the Nile, it is not only too valuable to the living to be used for the monuments of the dead, but also by reason of its annual inundation it is 'unsuitable for burials of a nation which wished to preserve the contents of the graves.'³

There are also considerable groups of pyramids in the Sudan, notably in the areas of Meroë, Nuri, Kuru, Napata, Gebel Barkal, and Begrawiya, but these are very different from those of Lower and Middle Egypt. The Sudanese pyramids are much smaller—generally between 6 and 25 metres square, and

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rarely exceeding 50 metres square; they are also more slender, their slope angle being in the neighbourhood of 68 degrees instead of the average of 52 degrees of those between Abu Rauwâsh and El Faiyûm. The Meroïtic or Sudanese pyramids are also much later in date (Dynasty xxv) and instead of having a ramp they have steps leading down to the burial chamber from outside the doorway of the cult room. They are all tombs of royalty.⁴

The pyramids of Mexico are of an altogether different origin and period, and will not be discussed in this work.⁵

III. HISTORY OF STUDY.

(a) *Ancient Egyptian References.*

During Dynasty vi a visitor came to the Maidûm pyramid of Snefru and wrote on the wall of the offering shrine of the upper temple, ' thrice good is the name of King Snefru,'⁶ which means ' thrice beautiful is the name of the king beautifier.' This seems to be the earliest visitor's inscription known from any ancient Egyptian monument.

During Dynasty xviii the same pyramid received a visit from ' the scribe Aakheperkara-senb, son of Amenmesu the scribe and reader of the deceased king Aakheperka (Thutmosis i).' He ' came here to see the beautiful temple of the Horus (King) Snefru; he found it like Heaven within when the sun god is rising in it; and he exclaimed, " may Heaven rain with fresh frankincense and drop incense upon the roof of the temple of the Horus King Snefru."'⁷ This inscription was likewise written on the wall of the offering shrine in the upper temple. During the same Dynasty, the scribe Ahmose, son of Iptah, came to see the temple of Djeser. He found it as though heaven were within it, Rē rising in it. Then he said: " Let loaves and oxen and fowl and all good and pure things fall to the *ka* of the justified Djeser; may heaven rain fresh myrrh, may it drip incense!"'⁸ This inscription he wrote in hieratic on the wall of the northern building of the Step Pyramid complex of Djeser. On the walls of the north and south buildings of the Step Pyramid are several inscriptions of Dynasties xviii and xix. During Dynasty xix, a scribe came ' to see the pyramids (of Abu Sîr); then he spoke words of incantations from the books in order to invoke the image of Sakhmet of Sahurē.' He made offerings and read passages from the book of Ptah in order that Sakhmet of Sahurē should grant a life of 110 years to him and his friends. In the tomb of Ptahshepses near the pyramid of Sahurē he wrote an inscription in hieratic recording his visit and the details thereof.⁹

During the same Dynasty, visits to the pyramids were made for another purpose by Khamuas a son of Ramesses ii. He had a great regard for ancient monuments and visited them in order to cause repairs to be carried out wherever necessary. The monuments known to have received his attention are the pyramid of Unis (where most of an inscription of Khamuas is still to be seen), the tomb of Shepseskaf known as the Mastabet Fara'ôn, the pyramid of Sahurē at Abu Sîr, and the sun temple of Neuserrē at Abu Girâb. His work consisted not only of repairing these monuments but also of writing on them the names of those for whom they were built, for the benefit of posterity.¹⁰ Documents

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relating to the Ramesside tomb robberies throw a good deal of light on the condition of the Theban tombs (including the pyramids of the Intefs) during Dynasty xx.¹¹

During Dynasty xxvi or slightly later, visitors wrote hieroglyphic or hieratic inscriptions of no particular interest on the pyramid of Kheops at Gîza¹² and in that of Snefru at Dahshûr.¹³ The inscriptions collected above show the reverence with which the Memphite pyramids were regarded by some persons during the New Kingdom, and that a prince (Khamuas) by his works of restoration earned a right to be classed among the earliest guardians of antiquities.

(b) *Classical References.* Herodotus (c. 450 B.C.) gave¹⁴ a graphic account of how in the reign of Kheops the Egyptians quarried stone from the east side of the Nile and transported it across the river to 'the mountain called the Libyan'; 'and they worked to the number of a hundred thousand men at a time, each party during three months.' He further stated that it took them ten years to build the causeway leading up to the pyramid, and twenty years to build the actual pyramid. His account of the manner of building the pyramids in steps is somewhat in accordance with the method shown by recent excavations to have been followed for many of them. He had an obliging dragoman who translated a hieroglyphic inscription stating the sum spent in buying radishes, onions, and garlic for the workmen. Similar stories exist among the dragomans at the present day. In his short account of Khephren's pyramid Herodotus was careful to observe that the first course was of 'variegated Ethiopian stone' (Aswân granite). He remarked on the wickedness of Kheops and Khephren and the way they oppressed their people. Mycerinus on the other hand was beneficent towards his subjects and built a smaller pyramid, consequently not oppressing the people so much as would have been necessary for a larger one. It was built 'half way up of Ethiopian stone' (Aswân granite).

In describing the pyramids of Gîza, Strabo added to the account of Herodotus by giving the following details of the entrance to the great pyramid:¹⁵

'The Greater pyramid, a little way up one side, has a stone that may be taken out, which being raised up, there is a sloping passage to the vaults.'

Petrie compared this account with the northern entrance to the Blunted Pyramid of Dahshûr, in which may be seen two holes at the top as if for a flap door.

In his account of the Gîza pyramids, Diodorus Siculus suggested¹⁶ that 'the process of building (them) was carried on by raising mounds of earth; for at that period no machines had been invented.' His account consists in the main of a repetition of that of Herodotus, but he added the following observation:

'It happened that neither of the kings, who constructed them for their sepulchres, was buried in them: for the multitude enraged at the sufferings endured in the building them, and at the many cruel and violent actions of these kings, threatened to pull their bodies to pieces and tear them insultingly from the tombs.

Thus both at their deaths charged their relations to inter them secretly in some obscure place.'

INTRODUCTION

Mycerinus however 'hated the cruelty of the kings his predecessors, and zealously pursued a life of kindness and beneficence towards his subjects.' 'He spent much money on the Oracles' (The Sphinx?). Diodorus Siculus stated that Mycerinus died before his pyramid was finished, and recent excavations have confirmed the accuracy of that assertion.

In his description of Egypt, Pliny observed :¹⁷

'We will mention also cursorily the Pyramids . . . that idle and foolish exhibition of royal wealth . . . There are traces of a great number of Pyramids begun and left unfinished . . . Within the largest Pyramid there is a well, eighty-six cubits deep. The river is supposed to have been let in by it.'

It remains to add that the classical authors all infer that the Giza pyramids were possessed of their casing at the time they wrote.

(c) *European Writers to the End of the Eighteenth Century.* The earliest European visitor to publish an account of the pyramids seems to have been Breydenbach (1484), who mentioned the tradition that the pyramids were the granaries of Joseph, built by him to provide against the seven years of famine. Baumgarten (1594) stated that the pyramid of Kheops was so big that a man from the top of it could not shoot an arrow clear of the masonry. Sandys (1610) was accompanied by Janissaries who fired off their guns into the entrance in order to frighten away the serpents, etc. After that, he entered :

'a most dreadful passage, and no less cumbersome; not above a yard in breadth and four feet in height, each stone containing that measure. So that alwaies stooping, and sometimes creeping, by reason of the rubbish, we descended (not by stairs, but as down the steep of a hill) a hundred feet; where the place for a little circuit enlarged: and the fearful descend continued, which they say none ever durst attempt any farther . . . A turning on the right hand leadeth into a little room, which by reason of the noysome savour and uneasy passage, we refus'd to enter.'¹⁸

After exploring the other parts, he concluded 'this is all that huge mass containeth within its darksome entrails, at least, to be discovered.'

He recognised that the King's Chamber was lined with 'Theban marble.'

A few years later (1646) the first English book on the pyramids came from the pen of John Greaves, entitled *Pyramidographia*, containing an element of that quaintness which is better known in Sir Thomas Browne's *Hydriotaphia, a Discourse on Urne Buriall*, 1658. The work of Greaves is of little scientific value at the present day, but a number of quotations therefrom will be found scattered among the pages of the present work.

A traveller named Pietro della Valle visited Egypt in 1616 and saw not only the pyramids of Giza but also those of Abu Sir, Saqqâra, and Dahshûr. His account was written after consulting the work of Bellonius (1553) who also visited the pyramids of Saqqâra and elsewhere. Among the visitors of the eighteenth century who left accounts of the pyramids were Quatremere (1701), Perizonius (1711), Shaw (1721), Norden (1737), Pococke (1743), Niebuhr (1761), Bruce (1768) and Browne (1792-1798). Although Belzoni was slightly later in date (1820), his attitude of mind to Egyptology has an eighteenth century flavour. He made considerable efforts to find the passage into the pyramid of

EGYPTIAN PYRAMIDS

Khephren. Discovery of a passage made by robbers 'gave me no little delight and hope returned to cherish my pyramidal brains,'¹⁹ and further perseverance resulted in his finding and clearing the original passage, in celebration of which he carved his name on the slab above the entrance and also on the wall of the sarcophagus chamber.

(d) *Arabic Writers.* Among the early Arab authors was Abu Ma'shir Ja'far Ibn Muhammad Balkhi (late 9th century A.D.) who wrote that :

'the wise men, previous to the flood, foreseeing an impending judgement from heaven either by submersion or by fire, which would destroy every created being, built upon the tops of the mountains and in Upper Egypt many pyramids in stone, in order to have some refuge against the approaching calamity.'²⁰

He also mentioned the tradition that the pyramids were the granaries of Joseph.

Masūdi (mid. 10th century A.D.) stated that the passages of the Giza pyramids were filled with talismans, wonderful things, and idols, and with the writings of the priests, containing all manner of wisdom, the names and properties of the medical plants, and the sciences of arithmetic and geometry. To this was added (*inter alia*) 'the history and chronicles of times past, of that which is to come, and of every future event which would take place in Egypt'²¹ To this formidable list some later writers added according to their powers of imagination.

Among the most important of Arabic historians was Abd-el-Latif (early 13th century A.D.) who gave a detailed account of the pyramids of Giza and elsewhere, describing the jointing of the stones as so fine that scarcely a needle or a hair could pass between them. He observed that some are of brick and others of stone, and that some of them are built in steps ; also that they have their sides facing the four cardinal points. The Giza pyramids were, he said, inscribed with ancient characters now unintelligible ; but the inscriptions on the first two pyramids were so numerous that copies of them would fill more than ten thousand pages.²² (These were evidently the graffiti written on the casing stones by visitors during all ages since the pyramids were built).

(e) *The Scientific Awakening.* Napoleon Buonaparte's expedition to Egypt was archaeological as well as military ; and one result was the publication of the *Description de l'Égypte* (1821-1829), which remains a monument of research for all time.

Not many years later, the German Richard Lepsius undertook prolonged researches in Egypt, the chief result of which was the publication of *Denkmäler aus Ägypten und Äthiopien* (1849-1859), a work of great erudition and immense labour. Among his numerous other works may be mentioned *Über den Bau der Pyramiden* (On the Construction of the Pyramids), a paper in which he outlined the theory that most of the pyramids consist of a core with a series of stepped accretions, the triangular gaps of which were then filled in to produce the pyramidal form. The Englishmen Vyse and Perring made a careful and prolonged study of all the pyramids between Abu Rauwāsh and the Faiyūm, their

INTRODUCTION

text being published in three quarto volumes in 1840-42, and illustrations in the form of large scale plans and sections in three folio volumes in the same years. Their work remains a classic on the subject. Among later workers Maspero deserves special mention for his excavations and publications on the pyramids of Dynasties v and vi containing the Pyramid Texts of which he published a brilliant pioneer translation. From the latter part of last century to the present day, the best work on the pyramids has been done by L. Borchardt at Abu Sir, Petrie at Gîza and in the Faiyûm, Reisner at Gîza, Gustave Jéquier at South Saqqâra, and Firth, Quibell and Lauer at North Saqqâra. The results of the labours of these and other workers form the backbone of the following chapters.

EGYPTIAN PYRAMIDS

REFERENCES

1. FRAZER, SIR J. *Fear of the Dead in Primitive Religion*, 1933-6.
2. *P.S.B.A.*, XVI, 237-8.
3. REISNER, G. A. *Egyptian Conception of Immortality*, 1912, pp. 4-5.
4. REISNER, G. A. 'The Meröitic Kingdom' (*J.E.A.*, IX, 1923, 34-78), and 'The Pyramids of Meröe and the Candaces of Ethiopia' (*Bulletin Boston Museum of Fine Arts*, XXI, No. 124).
5. LEHMANN, W. *Aus den Pyramidenstädten in Alt-Mexiko*, 1933.
6. PETRIE, W. M. F. *Medum*, 1892, pp. 10, 40.
7. PETRIE, W. M. F. *Medum*, 1892, p. 40.
8. FIRTH AND QUIBELL. *Step Pyramid*, I, 1935, p. 78.
9. *Bulletin de l'Institut d'Égypte*, 3rd Series, No. 5, 1894, pp. 107-113.
10. *Annales*, S. A. XXVI, 45, XXXVII, 201-211.
11. PEET, T. E. *The Great Tomb Robberies of the Twentieth Egyptian Dynasty*, 1930.
12. BORCHARDT, L. *Längen und Richtungen der Vier Grundkanten der Großen Pyramide bei Gise*, 1926, p. 16.
13. VYSE, H. *Gizeh* III, Plate 2 (opp. p. 69) and p. 76.
14. HERODOTUS. *History*, Book II, 124 f.
15. STRABO. *Geography*, Book XVII, chap. 1, § 33.
16. DIODORUS SICULUS. *History*, Book I, 63-64.
17. PLINY. *Natural History*, Book XXXVI, Section 16.
18. SANDYS. *Travels*, 1670, p. 101.
19. BELZONI, G. B. *Narrative of Operations in Egypt and Nubia*, 1820, p. 266.
20. Quoted in VYSE. *Gizeh* II, p. 319.
21. Quoted in VYSE. *Gizeh* II, p. 325.
22. ABD-EL-LATIF. *Account of Egypt*, Book I, Chap. 4.

LITERATURE

1. ETYMOLOGY

DICKERMAN, L. 'On the Etymology and Synonyms of the word Pyramid,' in *Journal of American Oriental Society*, xv, 1893; xxv-xxxi (useful but contains numerous inaccuracies).

GILBERT, P. 'Remarque sur le signe *mr* Δ,' in *Annuaire de l'Inst. de Phil. and Hist. Orientales*, Brussels, III, 1935, 155-6.

2. EARLY REFERENCES

VYSE, COL. H. *Operations Carried on at Gizeh*, II, 1840. (Contains nearly all the extracts from the early writers).

J. (DE) M (ORGAN). 'Un Touriste à la Nécropole de Memphis' in *Revue d'Égypte*, 1895.

3. LANDMARKS IN RESEARCH

Various Authors. *Description de l'Égypte*, 1st Edn., 1809-22; 2nd Edn., 1821-9.

MUNIER, H. *Tables de la Description de l'Égypte*, Cairo, 1943.

EBERS, G. *Richard Lepsius: A Biography*, New York, 1887.

PETRIE, F. *Seventy years in Archaeology*, 1931.

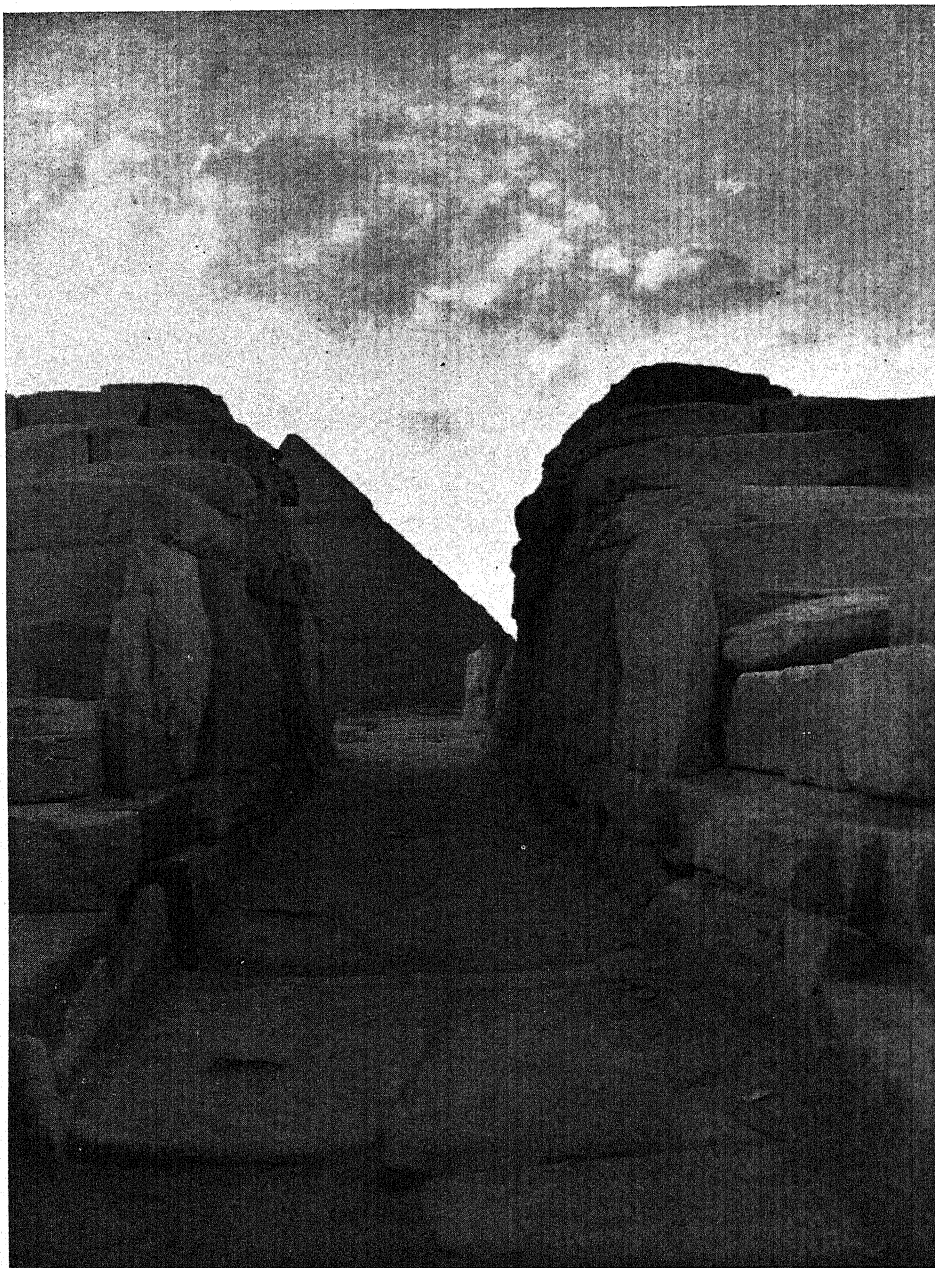
PLATE II



PYRAMIDS OF GIZA, from Sandys' *Travells*, 1670

facing p. 20

PLATE III



CAUSEWAY OF THE PYRAMID OF KHEPHREN

Photo : L. V. Grinsell

facing p. 21

CHAPTER 2

The Pyramid Complex

THE pyramid complex consists normally of most or all of the following monuments. There is a lower temple on the boundary of the desert edge and the cultivated valley of the Nile, and from this a causeway extends westwards to the upper temple, where offerings were made to the dead monarch. At the western end of this temple was a shrine containing an offering slab and a false door through which the *ka* of the dead monarch was supposed to receive the offerings. Behind this was the pyramid itself, with its entrance(s), ramp, vestibule, passages, antechambers, serdabs, and sarcophagus chamber. The pyramid and generally the inner part of the upper temple were usually placed in a square or rectangular enclosure bounded by a temenos wall. Within a few metres of some of the pyramids of Dynasties IV and V were one or more large rock-hewn barques, believed to symbolise the morning and evening barques of the sun god Rē. Surrounding the pyramids were the private tombs of the lesser members of the royal family, the court officials, and other important people of the time. In some instances, as at the pyramid of Khephren (Giza) and near the pyramid of Sesostri II (Lahûn), it has been possible to distinguish the dwellings of the workmen, architects, sculptors, stonemasons and others connected with the building of the pyramids and their associated structures. Probable foundations of dwellings for the priests and others concerned in the religious and administrative matters connected with the pyramids have been identified near the pyramids of Ammenemes III at Dahshûr and Neferirkarê at Abu Sir.

The more important of these parts of the pyramid complex will now be described individually.

I. THE LOWER TEMPLE.

With the exception of queens' pyramids and ritualistic pyramids, nearly all the pyramids of the Old Kingdom are known to have had a lower temple, which may have been connected with the Nile by a canal. Apart from the possible example of Sesostri II at Lahûn, no lower temples of the Middle Kingdom have yet been found. As the lower temples were situated on the border of the desert and the Nile Valley they have in many cases almost completely vanished, on account of the claims of the Nile floods, the cultivators of the land, and the searchers for building materials.

It is a question whether some or all of these temples were built on quaysides (ancient Egyptian *mrywt*) constructed for unloading Tura limestone, Aswân

EGYPTIAN PYRAMIDS

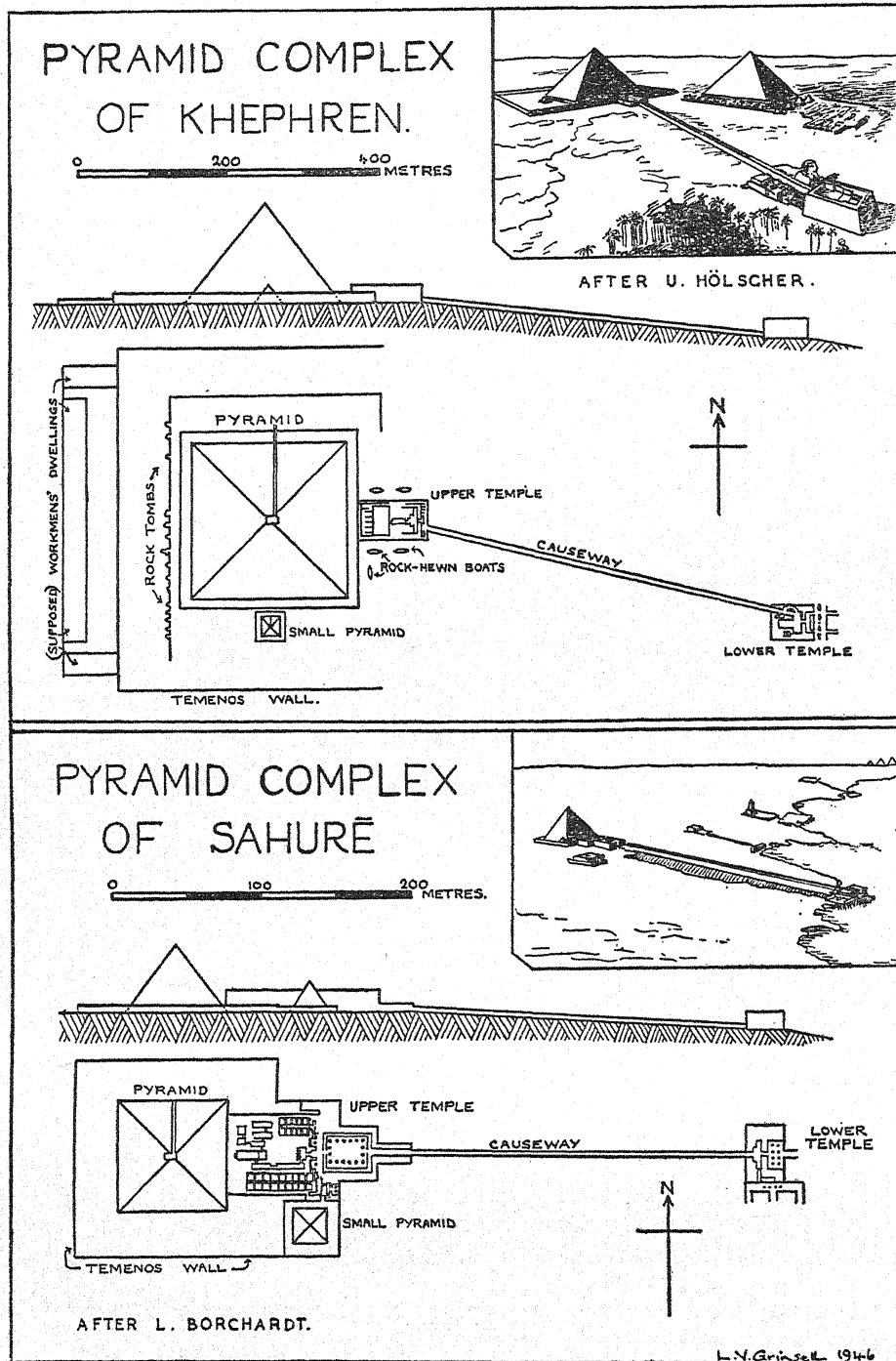


FIG. 1

THE PYRAMID COMPLEX

granite and other materials used in building the pyramids. If that were so, the lower temples could not have been built until after the pyramid and upper temple had been nearly completed; and the evidence of dated stone blocks shows that the lower temples were normally among the last parts of the pyramid complex to be built.

The functions of the lower temples are as yet uncertain, but it is likely that they included the ritual washing of the king before embalming, and perhaps the embalming ceremony as well.

Each lower temple normally consists of one or more entrances on the east side, cult rooms, storerooms, and at the west end an exit to the causeway which led to the upper temple. In the floor are sometimes basins and drainage channels, perhaps connected with the funerary ceremonies. During Dynasties v and vi some of the temple walls were decorated with reliefs (the king vanquishing his enemies; figures of divinities, etc.). The temple furniture included royal statuary and statues of the king with nome-divinities (Dynasty iv), offering vases, and flint implements including knives for the 'Opening of the Mouth' ceremony (Mycerinus).

The best preserved lower temple is that of Khephren at Gîza, which contains a magnificent T-shaped hall of pink granite pillars. The lower temples of Unis (North Saqqâra) and Pepy II (South Saqqâra) are also worth visiting.

II. THE CAUSEWAY.

The causeway appears to have served two purposes—first to assist in the cartage of non-local stone to the pyramid, and later to form a kind of processional way from the lower to the upper temple. The axis of the causeway is normally either east-west, north east-south west, or south east-north west. Although most causeways are straight, those of Neuserrê at Abu Sîr and Unis at Saqqâra involve one or more bends along their course. The causeway of Neferirkarê was diverted to lead to the pyramid of Neuserrê.

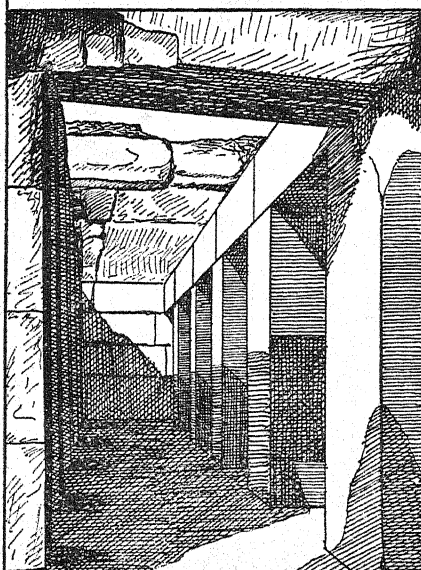
Although the earliest causeways (*e.g.* that of Snefru at Maidûm) may have been open, the later examples of the Old and the Middle Kingdoms were walled and roofed over except for a narrow central slit. The walls were normally of fine white limestone and decorated with reliefs (offering processions, etc.). Herodotus¹ said that the walls of the causeway of Kheops were covered with carvings of animals. The causeway of Sesostris I at Lisht was lined with Osirid statues of that king. The ceilings were normally of white limestone, decorated with 5-rayed stars.

The causeway of Khendjer II (Dynasty XIII) was walled and paved with mud brick. Most of the causeways were paved with limestone, but that of Userkaf was paved with basalt. Occasionally (as at the causeway of Khephren) there are subways for cross-traffic.

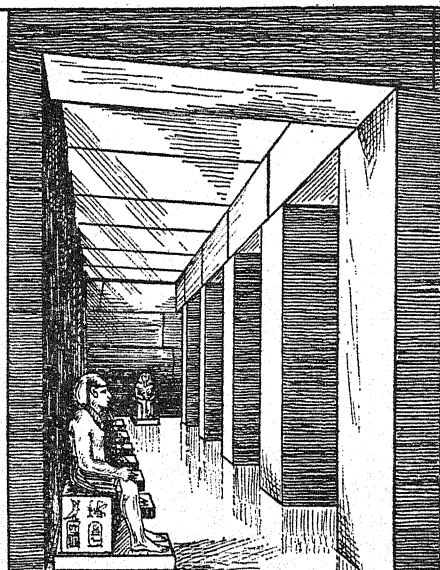
The best examples of pyramid causeways are of Djedefrê (Abu Rauwâsh); Khephren and Mycerinus (Gîza); Sahurê and Neferirkarê (Abu Sîr); Unis (North Saqqâra) many of the wall reliefs of which are in good condition; Pepy II (South Saqqâra) and Snefru (Maidûm).

EGYPTIAN PYRAMIDS

LOWER TEMPLE OF KHEPHREN.



AS IT IS.

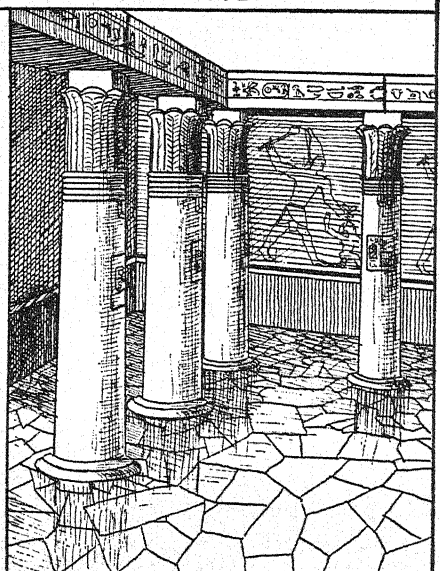


AS IT WAS - AFTER HÖLSCHER.

UPPER TEMPLE OF SAHURÉ.



CENTRAL COURT - AS IT IS



CENTRAL COURT - AS IT WAS.

L.V. Grissell 1946.

FIG. 2

THE PYRAMID COMPLEX

III. THE UPPER TEMPLE.

The situation of the upper temples in relation to the pyramids varied from time to time. The earliest of all, that of Djoser at Saqqâra, was in the approximate centre of the north side, the structure to the south-east being connected with the Sed jubilee and not a funerary temple. The first pyramid to have an upper temple at the east side was that of Snefru at Maidûm, the perfectly preserved offering shrine of which may still be seen. The temples continued to be east of the pyramids until the end of the Middle Kingdom, with the partial exception of that of Userkaf (Part II, Chapter 4, Section III) and the possible exception of that of Ammenemes III at Hawâra. The siting of the temples east of the pyramids may have been due to the influence of the Heliopolitan doctrines, as the priests facing the false door in the offering shrine would be looking towards the west, the land of the dead and the region of the setting sun.

The functions of the upper temples are not yet completely known ; but it is certain that offerings to the dead were presented in the offering shrine at the west end, where the offering ritual must also have been recited. It is likely that offerings were prepared in other parts of the upper temples. The ' Opening of the Mouth ' ceremony may have been performed before the statues in the five statue-niches west of the central courtyard. These temples may have been intended as ' houses for the *ka* ' of the dead king.

The upper temples of pyramids are normally divided into two parts ; it is convenient to call the eastern portion the outer section, and the western portion the inner section. The division between the outer and the inner section was ill-defined in Dynasties III and IV but became clearly marked from Dynasty V onwards, when the outer was separated from the inner section by the temenos wall of the pyramid.

(a) *The outer section consists normally of :*

- (i) An entrance corridor.
- (ii) A central court. The central courts of Dynasty IV had their long axis north-south, but from Dynasty V onwards the long axis was east-west. They were generally surrounded by about 16 or 18 pillars (Userkaf ; Pepy II), or columns which were either palmiform (Sahurê, Unis), lotiform (Neferirkarê ; Neuserrê), or papyri-form (Sahurê and Neuserrê). Some of the central courts contained royal statues (possibly Khephren, certainly Sesostri I). The courts of Khephren, Sahurê, Neuserrê, Sesostri I, and probably others contained an offering table which was normally decorated with reliefs of offering bearers from the chief nomes of Upper and Lower Egypt. The courts of Kheops, Khephren and Mycerinus contained basins and drainage channels of unknown purpose.
- (iii) Storerooms for offering-vessels, etc.

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(b) *The inner section* consists normally of :

- (i) A group of five statue-niches, each of which probably contained a statue bearing one of the king's five names.
- (ii) Storerooms. These generally include a group of five storerooms connected by a passage with the five statue-niches, suggesting that they contained offerings to be made, or implements or other equipment to be used, before the statues in the five niches.
- (iii) Antechambers (usually two) between the five statue-niches and the offering shrine.
- (iv) The offering shrine, among the most important parts of the whole pyramid complex. At the west end of the offering shrine was a false door of the recessed-panel type, at the foot of which was an offering slab. As the false door and the offering table were generally of granite, sandstone, alabaster, or other desirable stone, they have nearly always been removed, almost the sole survivors being the false door of Ammenemes I (Lisht) and the offering table of queen Udjebten (South Saqqâra).

The tendency for the different parts of upper temples to be arranged along an east-west axis has been attributed to the preoccupation of Egyptian ritual with processions.

The upper temples of Dynasties v and vi have yielded a fine selection of limestone reliefs, the scenes depicted including the king vanquishing his enemies, the king hunting, the Sed jubilee festival, maritime expeditions, processions of divinities, the king with the goddesses Bastet and Hathor, the slaughtering of animals for sacrifice, the transport of temple furniture, and the bringing of offerings.

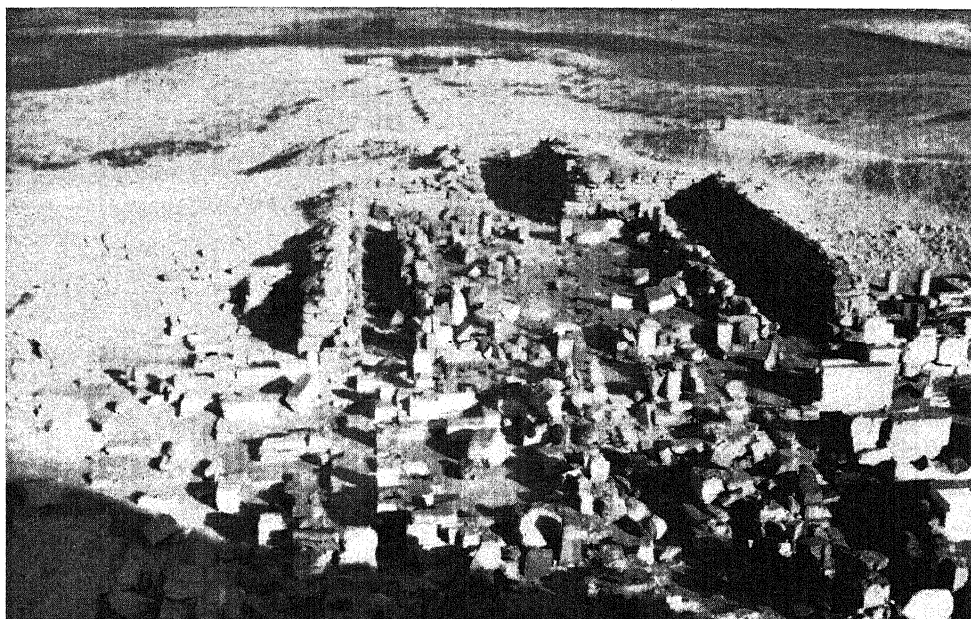
The chief objects found in the upper temples are royal statuary (almost entirely Dynasty iv) ; statuettes of bound captives (Teti and Pepy II) ; offering vessels of stone and pottery (mainly found in the storerooms) ; flint implements including knives for the ' Opening of the Mouth ' ceremony (Mycerinus) ; and mace-heads (Khephren and Teti).

The best examples of upper temple are those of Khephren and Mycerinus (Gîza), Sahurê, Neuserre, and Neferirkarê (Abu Sîr), Unis, and Pepy II (Saqqâra), Sesostri I (Lisht) and Snefru (Maidûm).

IV. THE NORTH OFFERING SHRINE.

From the beginning of Dynasty vi, pyramids had a small offering shrine on the ground level at the centre of the north side, just over the entrance. These shrines contained a false door and an offering slab, and were intended for the reception of offerings to the spirit of the dead. Remains of such shrines have been found around the entrance to the pyramids of Teti, Pepy II, queens Neit and Iput, and Sesostri I.

PLATE IV



(a) UPPER TEMPLE OF SAHURÊ

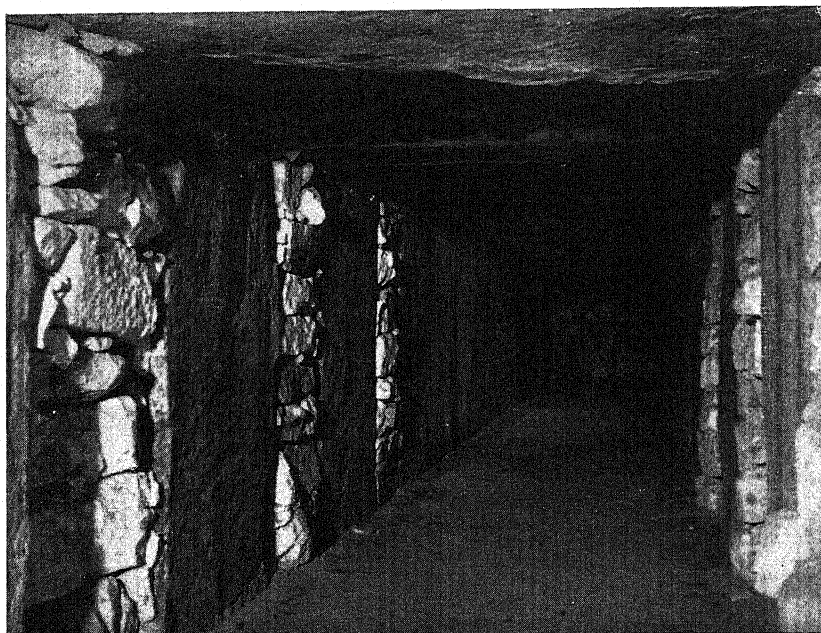
Photo : L. V. Grinsell



(b) ENTRANCE TO PYRAMID OF MYCERINUS

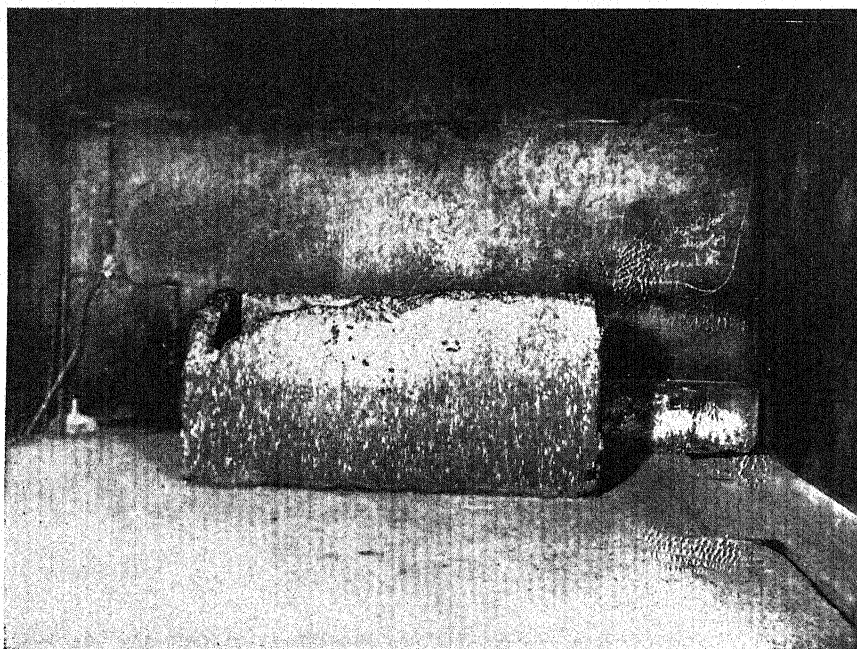
*Photo : L. V. Grinsell
facing p. 26*

PLATE V



(a) PYRAMID OF PEPY II: Horizontal Passage

Photo: E. F. S. Draper



(b) PYRAMID OF KHEOPS: Sarcophagus Chamber

Photo: L. V. Grinsell

facing p. 27

THE PYRAMID COMPLEX

V. THE PYRAMID.

The pyramid was nearly always situated immediately west of the upper temple and its four sides face approximately the four cardinal points. Slight deviations from this orientation have been explained by B. Svenonius² from the assumption that most of the pyramids were sited and their plans marked out during the inundation season, when the sun would (he states) give an orientation with that slight variation.

The normal pyramid is a tomb in the sense that it contains at its approximate centre a sarcophagus chamber intended for the burial of the monarch for whom it was built.

There is evidence that the normal pyramid embodied solar symbolism. The hieroglyphic word for the pyramidion (the capstone of the pyramid) was *bn*, *bnn*, or *bnn*, and it seems to be related to the word *wbn*, 'to shine' (referring to the sun's rays). The same words were used for the tops of obelisks, and Pliny described obelisks as 'petrified rays of the sun.'³ Breasted considered that the obelisk was really a pyramid on a high plinth, since the top of an obelisk is always pyramidal.⁴ It has been suggested by Moret⁵ and Drioton⁶ that the sloping sides of pyramids were intended to represent the slanting rays of the sun. Inscriptions on pyramidia (e.g. those of Ammenemes III and Khendjer II) reflect the Heliopolitan doctrines, and refer to the 'opening of the face' of the dead king on his seeing the Lord of the Horizon (the sun) traversing the sky and causing the deceased king to rise as Lord of Eternity and an imperishable one. The placing of the sarcophagus always near the west end of the sarcophagus chamber recalls the parallel between the passing of the dead king to the west and the setting of the sun in the west. The Pyramid Texts are replete with ideas connected with the solar cult of Heliopolis.

A curious additional evidence of the solar symbolism of pyramids is that Shespeskaf and Queen Khentkawes, who did not include *Rē* in their names, did not build pyramids but built tombs shaped like a large Old Kingdom sarcophagus. It is inferred that they did not identify themselves with the Heliopolitan doctrines.

The entrance to Old Kingdom pyramids is always on the north side and in the approximate centre.⁷ It is sometimes well above ground level (Snefru, Kheops, Khephren), but more usually on the ground level.

The entrance to Middle Kingdom pyramids may be on the north, east, south or west side, and is always on the ground level.

The internal arrangements, between the entrance and the sarcophagus chamber, varied with each pyramid.

The following account applies to the average pyramid of the Old Kingdom and exceptions, e.g. the pyramids of Giza, are mainly due to changes in design subsequent to the original planning (see Fig. 3).

There was normally a downward sloping ramp from the entrance to a vestibule. The ramp of the unfinished north pyramid (Dynasty III) of Zāwyet el 'Aryān has a stairway on each side, for the men to walk as they were lowering the sarcophagus and other heavy materials down into the sarcophagus chamber.

EGYPTIAN PYRAMIDS

It is possible that the walls on each side of the ramps of other pyramids may be built over such stairways, which would no longer have been necessary after the sarcophagus had been placed in its chamber.

The vestibule is wider and higher than the ramp and horizontal passage.

From the vestibule there was a horizontal passage leading southwards towards the centre of the pyramid. In this passage there were between one and three (usually three) vertical portcullis slabs generally of granite, which were lowered after the funeral in order to protect the tomb from robbers.

At the south end of the horizontal passage are three more or less connected chambers—the serdab room, the antechamber, and the sarcophagus chamber. These are at or near the approximate centre of the pyramid and may be above, on, or below the ground level.

The serdab, which is normally east of the end of the passage, is so called from the Arabic *serdab*—an underground passage. Its purpose was to house one or more statues of the deceased monarch (hence its ancient Egyptian name *pr-twt*—the statue-house.⁸ These statues were considered to possess the *ka* of the deceased, and offerings must have been made or ritual ceremonies performed before them at the time of the royal funeral. A good example of serdab recess in a pyramid is the tripartite example in that of Unis, which contained fragments of alabaster and handles of knives.

The antechamber, which is almost invariably at the south end of the horizontal passage, is connected with the serdab by a short corridor. A similar corridor leads from the antechamber to the sarcophagus chamber. The function of the antechamber may have been to provide a turning space for carrying the sarcophagus from the horizontal passage to the sarcophagus chamber.

From the end of Dynasty v to the end of Dynasty vi the walls of the sarcophagus chamber were inscribed with Pyramid Texts (see Part I, Chapter 5) which in some cases also covered the walls of the antechamber and other parts of the interior. During the same period the ceilings of the rooms containing Pyramid Texts were decorated with five-rayed stars in white or yellow on a blue background, and the walls immediately surrounding the sarcophagus were lined with alabaster and decorated with a recessed panelling, intended to symbolise the palace inhabited by the king's spirit.

Near the Western end of the sarcophagus chamber was the sarcophagus (called by the ancient Egyptians 'chest of the living,' or 'lord of life,' in allusion to the hope that the king lives for ever). It was generally of granite, basalt, quartzite (especially during the Middle Kingdom) or alabaster, and was either inscribed (Pepy II) or more usually uninscribed. Occasionally it was ornamented with the design of a palace-façade (Mycerinus and Sesostri III) symbolising its function as a house for the spirit of the deceased.

Near the sarcophagus (usually about a metre south-east) was a canopic chest in which were placed the four canopic jars containing the entrails of the deceased. A good canopic chest still in place is in the pyramid of an unknown king of Dynasty XIII adjoining the pyramid of Khendjer II.

The interiors of Middle Kingdom pyramids need not here be discussed in detail. Those of Ammenemes I, Sesostri I and Ammenemes II, so far as

THE PYRAMID COMPLEX

they have been explored, closely follow the Old Kingdom tradition, but the later examples contain a much more complex network of passages, ramps, stairways, dummy corridors, etc., details of which are given in Part II in the accounts of the individual pyramids.

VI. SUBSIDIARY PYRAMIDS.

Each king's pyramid often has one or more small pyramids nearby. Those near the pyramids of Kheops and Mycerinus are known to be the tombs of their queens, and have small funerary temples to the east. From Dynasty V onwards a small pyramid was usually placed near the south-east corner of each king's pyramid. These are unlikely to be for queens, because three of the four wives of Pepy II built a pyramid which likewise had a small pyramid at the south-east corner. The absence of funerary temples attached to these small pyramids suggests that they may not have been tombs but their purpose is unknown.

VII. SACRED BOATS.

Near some of the pyramids, especially those of Dynasty IV, are one or more large rock-hewn boats, believed to have been intended to symbolise the sun-barques of the day and night in which the dead king was to accompany Rē to the netherworld (see Part I, Chapter 5, Section III, h).

Varying between 10 and 60 metres in length, and between 4 and 10 metres in depth, these boats tend to have a wide undercut centre-castle and high and narrow bow and stern, resembling in type many of the later models of boats described by Reisner.⁹ They were roofed with limestone slabs set on ledges cut out of the rock on each side. A boat-enclosure near the solar temple of Neuserre at Abu Girāb was walled with mud-bricks.

The models of boats deposited with the dead during the later periods seem to be a survival of these vast rock-hewn examples. Indeed at the present day models of boats are often hung up in sheikhs' tombs and are sometimes known as ferry-boats.¹⁰

The best examples of rock-hewn boats are at Abu Rauwāsh, Giza (near the pyramids of Kheops and Khephren), and Saqqāra (near the pyramid of Unis). It is almost certain that they originally contained wooden boats.

VIII. THE TEMENOS WALL.

The earliest known wall enclosing a pyramid-complex is that of Djoser at Saqqāra, which is of white limestone and faced with recessed panelling and dummy doors which were derived from the walls of the mud-brick mastaba tombs of Dynasties I and II, some of which are still to be seen in the northern area at Saqqāra. Later temenos walls of Dynasty III enclose the Maidūm and Dahshūr pyramids of Snefru, the temenos wall of the latter consisting of two parallel walls with a space between. The later temenos walls of the Old Kingdom tend to divide the upper temple of the pyramid into the outer and inner sections, the outer section being left outside the area enclosed by the wall.

Several of the Middle Kingdom pyramids (*e.g.* those of Sesostris I and Khendjer II) have two temenos walls, an outer wall of mud-brick enclosing the

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outer section, and an inner wall of limestone enclosing the inner section of the upper temple. The outer wall of mud-brick was sometimes wavy or sinuous, as at the pyramid adjoining that of Khendjer II, and at the south pyramid of Mazghûna.

The average height of the limestone temenos wall was between 5 and 8 metres. That of Sesostri I at Lisht was decorated with magnificent reliefs (Fig. 25).

IX. PRIVATE TOMBS.

Surrounding the pyramids are the tombs of the rest of the royal family, and of the chief functionaries. Among the latter were the viziers (chief ministers of state); judges, military and naval commanders; overseers of the pyramid-cities; priests of the pyramids and temples; chief scribes; overseers of the works of the king; directors of the stone quarries of Tura, Aswân, and elsewhere; chief sculptors and artists; superintendents of the royal entertainments including music, dancing, and singing; and many others.

These tombs are generally in the form of rectangular masses of mud-brick (until the end of Dynasty III) or limestone (Dynasty IV onwards), and are known as *mastabas* from the Arabic *mastaba*, a rectangular stone bench of a kind formerly seen commonly outside Arab coffee-houses. They are often arranged in streets around the contemporary pyramids.

Each tomb structure consists normally of a sarcophagus chamber below ground and a mortuary chapel above ground. The walls of the mortuary chapels are often decorated with fine coloured reliefs of funerary scenes and scenes from everyday life. In the words of P. Montet,¹¹

'Cultivation and breeding, hunting and fishing, navigation, music and dancing, games, gymnastics, and medicine; then the trades—potters and metalworkers, millers and bakers, butchers and cooks, sculptors, makers of vases, carpenters, constructors of boats, leatherworkers, merchants, scribes, and in a word all the everyday life of the ancient Egyptians of the time of the pyramids passes before our eyes.'

Each chapel normally contains two false doors, at the foot of each of which is an offering tablet. The spirit of deceased was to come out through these false doors to receive the gifts placed on the offering tablets. There were nearly always one or more *serdabs* containing statues of deceased, before which ceremonies were performed. On the wall near the false doors there is a relief of the deceased at his table, on which are a number of thin blades; it is almost certain that these represent loaves or slices of bread. Surrounding the table are reliefs of the choicest items among the offerings, a list of the offerings arranged in vertical columns, and reliefs of processions of offering bearers. The name of the owner of the tomb is written in hieroglyphs on a cylindrical slab (door-drum) above the entrance to each tomb.

Less frequently private tombs are hewn out of the solid rock, and these rock-tombs reproduce the characteristic features of the *mastabas* insofar as their

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structure permits. They date from Dynasty IV and are of fairly frequent occurrence during Dynasties V and VI and in the Middle Kingdom.

During the reign of Pepy II (end of Dynasty VI) there developed a special type of tomb consisting of a mud-brick superstructure in the shape of a small house, beneath which was a shaft at the bottom of which was a very small sarcophagus chamber, the walls of which were beautifully decorated with designs of offerings, false doors, and offering lists.

Among the best examples of private tombs in Lower Egypt are :

- (i) Mastabas Seshemnefer (Giza)
 Ptahshepses (Abu Sir)
 Tjy, Ptah-hotpe, Mererukai, and
 Idut (N. Saqqâra)
 Senusretankh (Lisht)
 ' No. 17 ' Maidûm.
- (ii) Rock Tombs Mersiankh (Giza)
- (iii) Dyn. VI ' Mastaba-house ' tomb shafts : Shy (S. Saqqâra)

X. THE ADMINISTRATION AND PRIESTHOOD OF THE PYRAMID COMPLEX.

(a) *Civil Administration.* Each pyramid complex, or pyramid town, had an overseer known as the ' overseer of the pyramid town.' Beneath him were the overseer of the pyramid, the overseer of the domains attached to the pyramid, the master of largess due to the royal tomb, the overseer of scribes of the pyramid, the overseer of the guard of the pyramid plateau and many others.

(b) *Priesthood.* Each pyramid had an overseer of priests under whom served superior priests, lector priests, priests of purification, *ka* servants and others. The priesthood was largely hereditary. It was divided into four groups each of which served for one month, so that each group served for three months in the year. The priests were exempt from certain kinds of manual labour for which other people were liable.

The duties of the priesthood, insofar as they were connected with the royal funeral, consisted of purifying (ritually washing) and embalming the deceased king, after which the ' Opening of the Mouth ' ceremony was performed. They also presented offerings and recited funerary liturgy (from the Pyramid Texts) before the deceased. The duties subsequent to the royal funeral probably consisted chiefly of performing the ' Opening of the Mouth ' ceremony periodically before royal statues, and presenting offerings on feast days and other days as specified in Pyramid Texts, Section 2118 (see Part I, Chapter V, Section IIIb). Maintenance of the priesthood and of the presentation of offerings were provided by royal endowments.

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XI. SURVIVAL OF THE PYRAMID PRIESTHOOD.

Evidence of the persistence of the pyramid priesthood and ritual for centuries after the death of the king is derived from the following sources :

Lists of Priests. The titles of many of those buried in private tombs show them to have been priests of pyramids erected several generations or even several centuries before their time. Thus priests of Snefru have been identified belonging to Dynasties XIII, XVIII, XXVII, and the Ptolemaic period. Kheops likewise had at least 21 different priests attached to his pyramid, extending from Dynasty IV to Dynasty XXVI. The priesthoods of Khephren, Userkaf, Sahurē, Neuserre, Teti and Pepy I were likewise of long duration.¹²

Royal Decrees. The important Dahshūr decree of Pepy I declared the two pyramid-towns of Snefru exempt from State dues in order that the customary religious rites may continue to be performed in them.¹³ This was some 300 years after the death of Snefru, and there had in the meantime been three changes of Dynasty.

Temple Relics. Middle Kingdom statuettes of priests connected with the funerary worship of Pepy II were found in the upper temple of his pyramid and are now in Cairo Museum.¹⁴ In the upper temple of Teti was a stele consecrated by a Thutmosis which cannot be earlier than Dynasty XIX.¹⁵

XII. THE MEANING OF THE PYRAMID COMPLEX.

The chief elements in the average pyramid complex have now been described, and it remains to consider their meaning as a whole. For this purpose it is best to visualise the series of events which constituted the funeral rites and later observances connected with the death of a king of the Old or Middle Kingdom.

After his death, the first important stage in the funeral rites probably occurred at or near the lower temple. There was here a washing tent or tent of purification in which the king was ritually washed.

The ceremony of purification having been completed, the deceased was conveyed along the causeway to the upper temple where further ceremonies took place, the chief of which was the embalming of the body of the dead king. The embalming ceremony may have taken place in a group of about three rooms in the inner section of the upper temple. The process is known to have taken a very long time, and the only Old Kingdom evidence of duration concerns Mersiankh, great grand-daughter of Kheops, whose embalming took 272 days.

It was probably in or near the place of embalming that the ceremony of the Opening of the Mouth was performed on the mummy. This ceremony, although called the Opening of the Mouth, also involved the symbolic restoration of the hearing, sight and smell.

In due course the arrangements for the final interment were completed, and amidst scenes of great wailing and commotion the mummy of the deceased was placed in the wooden coffin which was passed through the entrance of the pyramid, lowered down the ramp, and placed to rest for a few moments in the

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vestibule, where short extracts from the Pyramid Texts may have been recited by a priest. This done, the movement of the coffin was continued along the horizontal passage to the antechamber. Then came the climax to the whole ceremony—the conducting of the coffin to the sarcophagus chamber, where it was lowered into the sarcophagus. The lid, which had been resting on temporary supports of mud-brick, was next placed on the sarcophagus, to which it was fitted by an ingenious device of oblique bevelling and slotting combined with sealing by a resinous substance. The intestines of the deceased were placed in four canopic jars (probably of alabaster) which were inserted in the canopic chest south-east of the sarcophagus.

East of the antechamber and sarcophagus chamber was a serdab (or three serdabs) containing statues of the deceased king. Before these statues the Opening of the Mouth ceremony was performed and offerings were made just before the pyramid was closed (as it was hoped) for all time.

Then came the task of closing the pyramid against the possible intrusion of robbers, a task however that never fulfilled its purpose. After the priests, coffin bearers, and others attending the last rites had retired from the sarcophagus chamber and serdab, and passed along the horizontal passage towards the entrance, the massive and heavy granite portcullis slabs were lowered. After the funeral party had ascended the ramp and reached the entrance, the ramp was filled with blocks of masonry which closely fitted the width and height of the ramp, and were slid down the ramp one by one until it was filled as far as the entrance. The latter was covered with a final block the jointing of which exactly fitted the casing so as to be indistinguishable from it.

From Dynasty VI onwards the position of the entrance was covered by a small offering shrine, which made it impossible to reach the entrance to the pyramid without destroying the shrine. Periodical offerings to the spirit of the deceased king were placed on the offering slab before the false door in this shrine.

For as long after the king's death as his endowed and hereditary priesthood existed and attended to their duties, which was in some cases several centuries, they presented periodical offerings in the offering shrines of the temples, and probably performed the Opening of the Mouth ceremony at regular intervals before the statues in the five niches of the upper temples, and before any other royal statues there may have been in the pyramid complex.

After the king's notable contemporaries had all died and become interred in their private tombs surrounding the pyramid of their king, the pyramid city became a city for the living *ka's* of the dead, and remained in that state for so long as the endowments granted from the royal treasury for its upkeep continued to be used for that purpose.

As was inevitable, sooner or later the endowments were transferred to other purposes, the priesthood became extinct, and the monuments fell to ruin.

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REFERENCES

1. HERODOTUS. *History*, II, 124.
2. SVENONIUS, B. *On the Orientation of the Egyptian Pyramids*, Lund, 1935.
3. PLINY. *Natural History*, XXXVI, 14.
4. BREASTED, J. H. *Development of Religion and Thought in Ancient Egypt*, 1912, p. 70.
5. MORET, A. *The Nile and Egyptian Civilisation*, 1927, p. 175.
6. DRIOTON, E. *Le Sphinx et Les Pyramides de Gizeh* (Service des Antiquités, Cairo, 1939), p. 4.
For the solar symbolism of pyramids, see also Schiaparelli, 'Il Significato Simbolico della Piramidi Egiziane,' in *A. R. Accademia dei Lincei*, 3rd Series, XII, 1884, pp. 121-161; Speleers, 'La Signification des Pyramides' and Moret, 'L'Influence de Décor Solaire sur la Pyramide,' both in *Mélanges Maspero, L'Orient Ancien*, 1935-8, pp. 603-636.
7. The pyramid of Snefru, at Dahshûr, has an entrance on the west side as well as the usual entrance on the north side.
8. *J.E.A.*, III, 254.
9. REISNER, G. A. *Models of Ships and Boats*, 1913.
10. BLACKMAN, W. S. In *Bulletin du Société Royale du Géographie d'Égypte*, XIV, 47-61.
11. MONTET, P. *Scènes de la Vie Privée*, 1925, p. 377.
12. PETRIE, W. M. F. *History of Egypt*, 1924, pp. 48-49, 60-61, 69-70, 83.
13. BORCHARDT, L. In *Ägyptische Zeitschrift*, XLII, 1-11; Moret, A., *Chartes d'Immunité*, Part III.
14. JÉQUIER, G. *Le Monument Funéraire de Pepi II*, Vol. II.
15. *Annales du Service des Antiquités*, XIII, 255-6.

LITERATURE

LOWER AND UPPER TEMPLES

- BORCHARDT, L. 'Die Totentempel der Pyramiden' in *Zeitschrift für Geschichte der Architektur*, III, Heidelberg, 1907.
GRDSELOFF, B. *Das Ägyptische Reinigungszeit*, Cairo, 1941.

PYRAMIDS

- BORCHARDT, L. *Die Pyramiden. Ihre Entstehung und Entwicklung*, Berlin, 1911.
'Zur Geschichte der Pyramiden,' in *Ägyptische Zeitschrift*, XXX, XXXII, XXXV (1892-7)
CAPART, J. *Memphis : à l'Ombre des Pyramides*, Brussels, 1930.
PETRIE, W. M. F. *Pyramids and Temples of Gizeh*, 2nd Edn., 1885.

SACRED BOATS

- GRINSELL, L. V. In *Antiquity*, December 1941 and March 1943.
HASSAN, S. *Excavations at Giza*. VI, 1946.

PRIVATE TOMBS

- MARIETTE AND MASPERO. *Les Mastabas de l'Ancien Empire*, 1882.
MONTET, P. *Les Scènes de la Vie Privée dans les Tombeaux Égyptiens de l'Ancien Empire*, 1925
BRUNNER, H. *Die Anlagen der Ägyptischen Felsgräber (Ägyptologische Forschungen)*, 1936.
KLEBS, L. *Die Reliefs des Alten Reiches*. Heidelberg, 1915.

CHAPTER 3

Origins, Development, and Decline of the Pyramid

I. BEFORE THE PYRAMIDS.

In late predynastic times the burials of the chiefs and nobility were in the form of contracted bodies placed on mats and interred in oval or rectangular pits dug in the sand or rock, and it was not until Dynasty I that a series of improved conditions made possible the developments in tomb architecture which followed. These improved conditions included the development of hieroglyphic writing, the growth of a well organised administration, the use of metal for weapons and implements, and above all the development of brickwork and stonework, which made possible the construction of adequate superstructures to the tombs. It has already been noted that nearly all Egyptian tombs consisted of

- (a) a burial-place below ground level (substructure),
- (b) an offering place above ground level (superstructure).

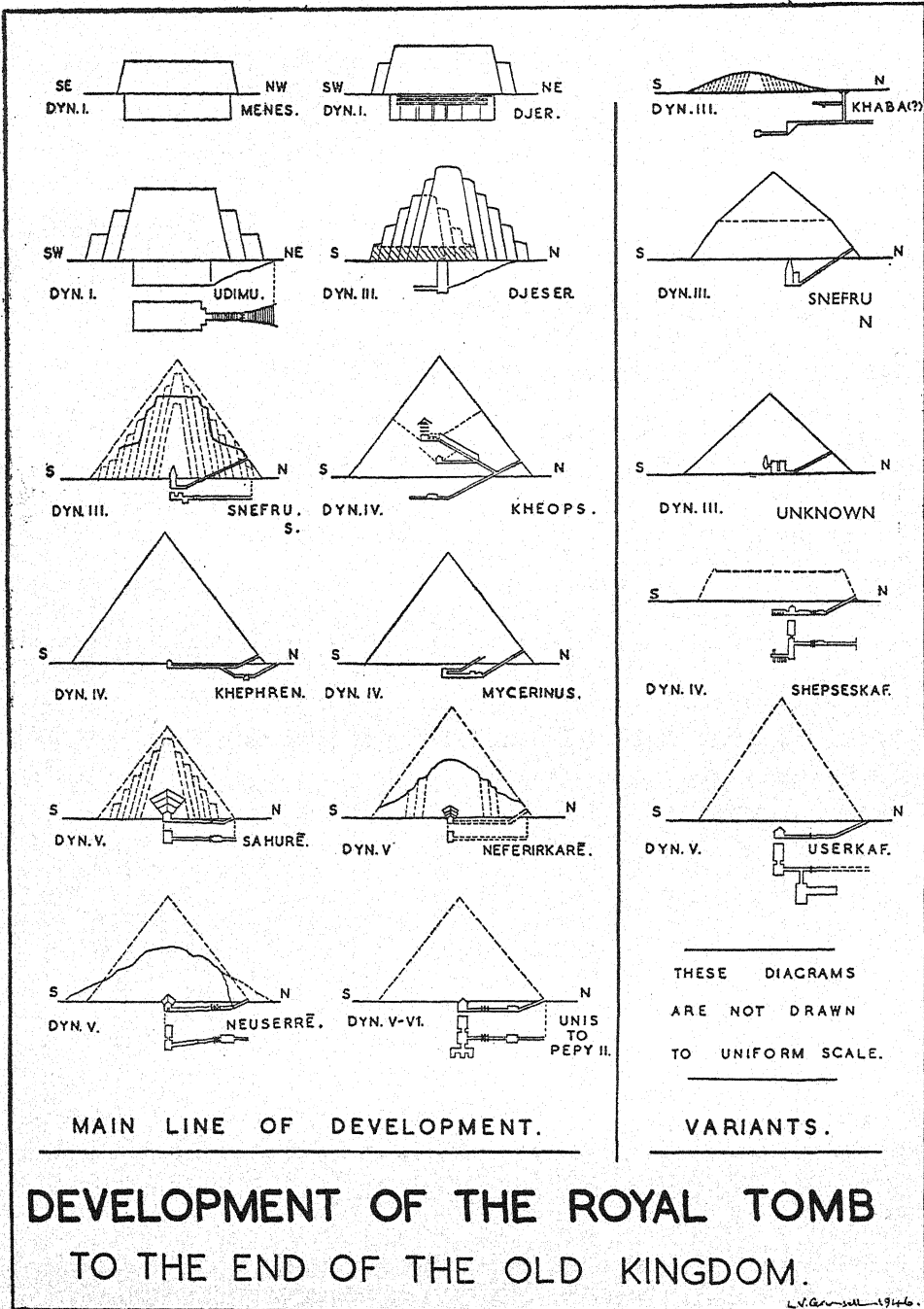
Most of the royal tombs of Dynasties I and II were at Abydos and Saqqâra. They are nearly all very dilapidated and only the salient features need be described here.

The earliest tombs (Hor-Aha Menes at Saqqâra and Menes and Narmer at Abydos) consisted merely of a chamber roofed with wooden planks and covered with a rectangular brick superstructure. That of Hor-Aha Menes at Saqqâra had the chamber subdivided and had a mud-brick solar barque to the north.

The tombs of Djer and Wadjet had their chamber subdivided, and one or two outer layers of brick were added to the sides of the superstructure. The latter addition was of great importance to tomb development as it led to the stepped mastabas, stepped pyramids, and finally to the pyramid itself. The tomb of Djer was surrounded by the graves of his eminent contemporaries, thus heralding the vast cemeteries around the pyramids of later times.

The tombs of Udimu, Adjib, Semerkhet, and Ka'a show an advancement in regard to access to the burial chamber. Whereas the previous tomb-chambers were accessible only from above, those of the four kings just mentioned had a stairway leading from the north side of the superstructure into the burial chamber, and between the entrance and the chamber were one or more portcullis slabs. The floor of Udimu's chamber was paved with slabs of granite.

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DEVELOPMENT OF THE ROYAL TOMB
TO THE END OF THE OLD KINGDOM.

Fig. 3

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There is reason to believe that during this early period the servants of deceased were buried alive or put to death in order to accompany him on his journey to the future state.

The most important royal tombs of Dynasty II were those of Peribsen and Khasekhemuy. They show the development of a series of chambers for offerings, etc., around the burial chamber, and the latter seems to have had a corbelled roof which heralded the corbelled roofs over the sarcophagus chambers of the pyramids at Maidûm and Dahshûr (Dynasty III).

It is possible that most of the royal tombs of Dynasties I and II had a small offering shrine on the east side and a structure on the edge of the desert, corresponding to the upper and lower temples of pyramids.

II. PYRAMIDS OF DYNASTY III.

At the beginning of Dynasty III the royal residence and capital moved to Memphis, whither it had been attracted mainly by the growing importance of the limestone quarries near Tura between Cairo and Helwan.

The stepped pyramid of Djeser at Saqqâra shows the following developments from the royal tombs of Dynasties I and II.

- (a) The superstructure is built of limestone instead of mud-brick; and from now onwards all the royal tomb superstructures are of stone.
- (b) The walls of the earlier tombs, which were often faced with recessed panelling, are transformed into a temenos wall, at a distance from the pyramid and enclosing the north temple, Sed Festival Court, and other structures. It is of limestone and faced in the style of a façade with dummy doors at intervals.

The entrance to the pyramid is by a rock-hewn stairway from the north, within the area of the north temple. There were no portcullis slabs but the stairway and passage were blocked after the interment had been made. The red granite sepulchral chamber is at the bottom of a deep shaft originally open to the sky but filled with masonry after the king had been buried. Other chambers in the substructure include the beautiful blue-tile chambers and, on the east side, the tombs of members of the royal family.

It remains to add that the tomb at Beit Khallâf, formerly attributed to Djeser, is now considered to be the private tomb of one of the king's officials.

Passing over the Dynasty III subterranean multiple-tomb beneath the upper temple of Unis, which had no effect on the development of the pyramid, we come to the two pyramids of Zâwyet el 'Aryân, which appear to have been built between the reigns of Djeser and Snefru.

The southern example consists of a limestone core with 14 layers or buttresses of the same material. Access to the sarcophagus chamber was by a stairway and passage, from an entrance near the north-east corner of the pyramid. Around the north, north-east, and north-west sides but outside the pyramid was a long corridor with 32 recesses.

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The unfinished northern example had no superstructure. The substructure consists of a ramp, horizontal passage, and double stairway cut into the bedrock from the north to the centre of the pyramid area, where there is an unfinished sarcophagus chamber containing a magnificent red granite sarcophagus. It is believed to have been for a king named Nebka or Netjerka.

The Blunted Pyramid of Dahshûr is an abortive form with a lower slope angle of 54 degrees and an upper slope angle of 42 degrees. Apart from this abnormal feature it is noteworthy for the magnificent corbelled roofs of the two sarcophagus chambers, one of which has a ramp from the north and the other from the west. The pyramid was the northern of the two pyramids built by Snefru, and is now (1947) being explored by the Egyptian Service of Antiquities.

We now come to the southern pyramid of Snefru, at Maidûm near the entrance to the Faiyûm. The Maidûm pyramid consists of a core with accretions which get smaller in proportion to their distance from the centre, so that the whole at one time had the appearance of a stepped pyramid. As in the case of the pyramid of Djeser, each step was cased with fine white limestone; but the steps were afterwards filled in to form a true pyramid. Of the upper temple there is visible only the offering shrine, a delightful little stone building with two stelae similar to those of the royal tombs of Dynasties I-II. Access to the interior of the pyramid is from the north and about 30 metres above the ground-level. The ramp leads downwards to a small passage which contains one chamber to the east and another to the west before ending in a shaft which leads upwards to the sarcophagus chamber, the roof of which is corbelled and has wooden crossbeams still in place. South of the pyramid, and within the temenos wall, is the remnant of a small pyramid.

The Dahshûr northern pyramid has internal features similar to the last. The structure of the interior masonry is not known but probably consists of a core with accretions forming a stepped pyramid. The interstices between the steps were then filled with masonry and cased with fine white limestone, small portions of which remain. The slope angle of the outer casing is about 43 degrees—much less than that of the average pyramid. The structure is almost complete except for the casing. The entrance is in the centre of the north side and about 28 metres above the base. It leads into a downward ramp which ends in a horizontal passage with two corbelled anterooms arranged in a manner similar to those in the Maidûm pyramid. From the farther ante-room, near the ceiling, there is a passage leading to the sarcophagus chamber, which has a corbelled roof. The name of the author of this pyramid remains unknown.

It will be noticed that the pyramids of Dahshûr and Maidûm all have fine corbelled sarcophagus chambers, and these are derived from the brick corbelling of the sarcophagus chambers of the royal tombs of Abydos. Reisner thought it was first introduced in the tomb of Ka'a, and later used in those of Peribsen and Khasekhemuy.¹ The use of corbelling however is not entirely a question of tomb development. Reasons of safety preclude the possibility of roofing large spans in mud-brick except by corbelling, and the same is true of limestone which cannot safely be used as single blocks for spanning roofs wider than about

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3 metres. The introduction of granite as roofing material however made possible the spanning of larger areas with flat slabs, *e.g.* in the upper chamber of the pyramid of Kheops.

All the pyramids of Dynasty III (those of Djeser and Snefru and the S. pyramid of Zâwyet el 'Aryân) have the outer masonry inclined downward towards the core of the pyramid. In this respect their masonry differs from the normal masonry of the pyramids of Dynasties IV, V and VI.

It remains to emphasise the way in which the earliest stone pyramids and associated structures reproduced in stone those things which had previously been done in wood, reeds, and mud-brick. The pyramids of Djeser and Snefru show the laying of stone blocks in 'headers and stretchers' typical of brickwork; the colonnade of Djeser is roofed with stone imitations of wooden logs; the blue-tile decoration of the chambers beneath Djeser's pyramid reproduce a reed pattern in faience; and the columns of the colonnade appear to be copies in stone of split reeds. Later stonework is largely concerned with the reproduction in stone of motives based on the papyrus, palm, and lotus.

III. PYRAMIDS OF DYNASTY IV.

The main royal cemetery of Dynasty IV is at Giza, and consists of the pyramids of Kheops, Khephren and Mycerinus, as well as the peculiar tomb of Queen Khentkawes.

The masonry of the three great pyramids of Giza is in such good condition that it does not permit any statement as to whether each pyramid consists, as is probable, of a core with accretions added. The superstructure had reached the final stage in its development, but the substructure continued to undergo modifications. The pyramid of Kheops appears to show three periods of construction, which have been described by Borchardt.² In the first period there was a ramp from the north side downwards to a short horizontal passage which led through an unfinished ante-chamber to a cul-de-sac. In the second period there was added an upper ramp and horizontal passage which led into the so-called (though mis-called) queen's chamber, the roof of which was pointed (apparently for the first time in a royal tomb). The third and final stage embodied the construction of the magnificent corbelled ascending gallery (recalling the corbelled chambers of the Maidûm and Dahshûr pyramids) which led to the upper sarcophagus chamber (now called the King's chamber) the roof of which was spanned with huge granite slabs and was flat. Above the roof were the five relieving chambers. The supposed ventilation shafts extending from the upper and middle chambers appear to be a unique feature.

There can be no doubt that the growth of the Heliopolitan sun-worship was responsible for considerable modifications in the form of the royal tomb-complexes from now onwards. These modifications followed the following lines:

- (a) an increase in the size of the upper temple and corresponding decrease in the size of the pyramid;

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- (b) the establishment of the invariable position of the upper temple adjoining the east side of the pyramid ; this enabled the officiating priests to face the setting sun ;
- (c) the presence near the pyramids of rock-hewn solar barques.

The pyramid of Khephren is slightly smaller than that of Kheops, and its upper temple a good deal larger. Around the latter are at least five rock-hewn barques. The king himself incorporated the suffix *Rē* into his name (*Khaf-rē*—Khephren). There is an increase in the use of granite, with which the first two courses of the pyramid are cased. A change of design appears to have resulted in the lower ramp and passage with sarcophagus chamber being abandoned in favour of the higher ramp, horizontal passage, and chamber.



The unfinished pyramid of Djedefrē at Abu Rauwāsh, which is certainly of Dynasty IV, throws no additional light on the general development of the pyramid-complex.

The pyramid of Mycerinus is much smaller than those of Kheops and Khephren, and the associated upper temple is larger in proportion. A further increase in the use of red granite is discernible, the first sixteen courses of the pyramid being cased with that material.

It may here be added that all three of the large pyramids of Gîza have the sarcophagus near the west end of the sarcophagus chamber. The roof of the sarcophagus chamber of Mycerinus consists of red granite slabs arranged in a gabled manner with their undersides cut into a false arch.

IV. THE TOMBS OF SHEPSESKAF AND KHENTKAWES.

Mycerinus died before his pyramid complex was completed, and was succeeded by his son Shepseskaf who finished his father's monument before building his own.

Shepseskaf and Khentkawes did not, like their predecessors and descendants, have *Rē* as part of their name but chose *ka* instead. The upper temple of Shepseskaf was not built on a large scale at the expense of his tomb, and the latter was not even a pyramid, for the pyramid seems to have been a sun-symbol. His tomb took the form of a gigantic sarcophagus, the home of the *ka*, and the hieroglyphic sign for it was , not . Yet the interior contained the usual ramp, vestibule, horizontal passage with three vertical granite portcullis slabs, ending in six small recesses, an anteroom, and the sarcophagus chamber. The latter was roofed with a granite false arch similar to that of the sarcophagus chamber of Mycerinus.³

The tomb of Queen Khentkawes, who may have been a daughter of Mycerinus and appears to have followed Shepseskaf to the throne as a queen in her own right, was of similar type. In the same way, she did not have *Rē* as part of her name ; and instead of allowing her tomb to be dominated by an enormous upper temple, her tomb actually encloses the temple, which is no more than a small offering shrine. Moreover her tomb was likewise in the shape not of a pyramid but of an enormous sarcophagus.⁴ She was a link between Dynasties IV and V.

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V. PYRAMIDS OF DYNASTY V.

Khentkawes was followed by Userkaf who returned to the Heliopolitan cult and may have changed his name to Userkarē as Manetho called him Userkheres. In common with nearly all the kings of Dynasty v he built a solar temple as well as a pyramid, and the necessity of dividing the available labour in order to complete both structures was probably the chief reason why the pyramids of Dynasty v are smaller than those of Dynasty iv. The late Mr R. Engelbach suggested⁵ that a decrease in population, resulting from plagues and/or famines during this Dynasty, diminished the quantity of labour available for building. The pyramids of Userkaf, Sahurē, Neferirkarē, and Neuserre differ from their predecessors of Dynasty iv in having their entrance approximately on the ground level. This caused the initial sloping ramp to be shorter and the horizontal passage to be longer. This passage contained either one or three portcullis slabs, and ended in a sarcophagus chamber (Sahurē) or an antechamber with sarcophagus chamber to the west. These antechambers and sarcophagus chambers always have pointed roofs. Indeed the horizontal passage of Neferirkarē likewise had a pointed roof.

The upper temples of Dynasty v show an increase in size at the expense of their pyramids, as compared with those of Dynasty iv. The central court has its long axis east-west, whereas in Dynasty iv it was always north-south. The upper temples of Dynasty v also show a great development of wall decoration in low relief accompanied by a decrease in statuary.

VI. PYRAMIDS OF DYNASTIES V-VI CONTAINING PYRAMID TEXTS.

The pyramids from the end of Dynasty v to the end of Dynasty vi show a further deterioration in the quality of the masonry of the superstructure, which in some cases seems to be little more than heaps of chips and rubble held together by the casing blocks where the latter still remain.

The pyramid of Unis, the last king of Dynasty v, records a remarkable change in the method of ministering to the needs of the dead. From now onwards the sarcophagus chamber, and often also other parts of the interior, have inscribed on their walls the celebrated Pyramid Texts which constitute the world's earliest known written record of ideas regarding religion and the future life. There appears to have been a tendency to allow the description of offerings etc., as given in the texts, to replace the actual articles which had in earlier times served for the funeral ceremonies. In this connection it may be noted that Unis appears to have been the last king to be provided with an enormous rock-hewn barque, and the later kings were apparently content with smaller barques or models of barques of wood, or even mere descriptions of them as given in the Pyramid Texts.

The ceilings of the sarcophagus chambers, and sometimes of the neighbouring passages and recesses, were during this period covered with five-rayed stars in white or yellow on a blue background, either incised or in relief. These stars are considered by some to have represented the spirits of the dead friends of deceased, the five rays representing his head, two arms, and two legs.

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All the pyramids of the type under review had internal arrangements which conformed to the following patterns :

- (a) Entrance in centre of north side, generally on ground level and originally blocked.
- (b) Short ramp, inclined downwards at angle of between 20 and 25 degrees.
- (c) Vestibule, slightly higher and wider than the ramp.
- (d) Horizontal passage, with three vertical granite portcullis slabs.
- (e) Antechamber at end of passage.
- (f) Corridor and serdab (in either one or three compartments) east of the antechamber.
- (g) Corridor and sarcophagus chamber west of the antechamber.
- (h) Sarcophagus oriented north and south and placed near west end of sarcophagus chamber ; canopic box south-east of sarcophagus.
- (i) Walls surrounding sarcophagus lined with alabaster and ornamented with pattern of palace-façade.
- (j) Remainder of wall-surface of sarcophagus chamber and sometimes other wall-surfaces decorated with hieroglyphs comprising the Pyramid Texts.

The long reign of Pepy II (about 94 years) ended Dynasty VI, which was followed by a period of anarchy.

VII. THE FIRST INTERMEDIATE PERIOD.

Of the royal tombs of Dynasties VII-X almost nothing is known. The country is believed to have been invaded by people from the north and elsewhere.

The pyramid of Ibi at South Saqqâra is considered to have been built at the beginning of Dynasty VII. It is of rough limestone blocks, probably originally cased with fine white limestone. From the centre of the north side a ramp leads into the sarcophagus chamber at the western end of which is a piece of granite from the sarcophagus. The walls of this chamber are crudely incised with Pyramid Texts and a palace-façade design on the wall-spaces surrounding the sarcophagus. The small temple to the east was of mud-brick. The extent of degeneration in tomb architecture since the reign of Pepy II was considerable. The ruined pyramid of Khui at Dara south of Meir may also belong to Dynasty VII.

Of Dynasty VIII no royal tombs are yet known. During Dynasty IX at least one king (Akhtoy IV) had a pyramid, probably at Saqqâra, as the false doors of two of the priests of his pyramid have been found there.⁶ Of the royal tombs of Dynasty X nothing appears to be known.

These dynasties were essentially a period of revolution, which 'left its trace in the material ravages undergone by the monuments of the Memphite age—the violation of chambers in the pyramids, the destruction of the attached royal temples, the mutilation of the statues of kings, and the abandonment of the sanctuaries of Rē and the royal funerary temples of the fifth Dynasty.'⁷

It is to this period that certain texts refer, including the *Dialogue of an Egyptian with his Spirit* and the *Admonitions of an Egyptian Sage*, which reflect

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in gloomy phrases the changed conditions. 'Behold . . . He who could make for himself no sarcophagus is (now) possessor of a tomb. Behold, the possessors of tombs are driven out on high ground . . . ' 'Behold, things are done, that have never happened for long time past (?); the king has been taken away (?) by poor men . . . What the pyramid concealed is become empty. Behold, a few lawless men have ventured to despoil the land of the kingship . . . ' 'Forsooth, the builders of (pyramids ?) have become field-labourers.'⁸

VIII. ROYAL TOMBS OF DYNASTY XI.

The period of misrule after the end of Dynasty VI is believed to have lasted about three centuries. Towards the end of this time the Intefs and Mentuhotpes were growing in power as nomarchs near Thebes, and finally one called himself King of all Egypt as Intef I, and was followed in due course by his successors Intefs II and III. Each had a mud-brick pyramid at Thebes, on the northern side of the entrance to the Valley of the Kings.

The Intefs were followed by the Mentuhotpes of whom there were about five. All erected tombs near the Valley of the Kings at Thebes, and in some cases their tombs appear to have been combined (*i.e.* one for Mentuhotpes II-III and one for Mentuhotpes IV-V); both the latter tombs had causeways leading to them from the east, and lower temples may also have been present.

Of the sepulchral monuments of the royalty of Dynasty XI only one now remains—the fine pyramid-temple of Mentuhotpes II-III immediately south of the temple of Hatshepsut, at El Deir el Bahari near the Valley of the Kings. It comprised the main features of the earlier pyramid complexes. A causeway extends from the desert edge, where there was probably a lower temple, westwards to an upward ramp at the end of which is a raised platform, approximately square, on which stood the upper temple. Many of the octagonal columns of the colonnades are still standing. On the walls of the temple were reliefs representing the chief scenes in the king's life, including his wars, and hunting scenes. In the centre of the temple is a square mass which originally formed the base of a small pyramid. The development of the temple at the expense of the pyramid, which had been gradually becoming more noticeable since Dynasty III, here reaches its climax; for the pyramid was surrounded on all four sides by the forest of pillars belonging to the temple.

West of the pyramid are a pillared courtyard and hypostyle hall near the west end of which Mariette found a granite offering table. From this courtyard there extends westwards a long ramp downwards to a granite chamber with a pointed ceiling, believed to be the tomb of Mentuhotpe III.

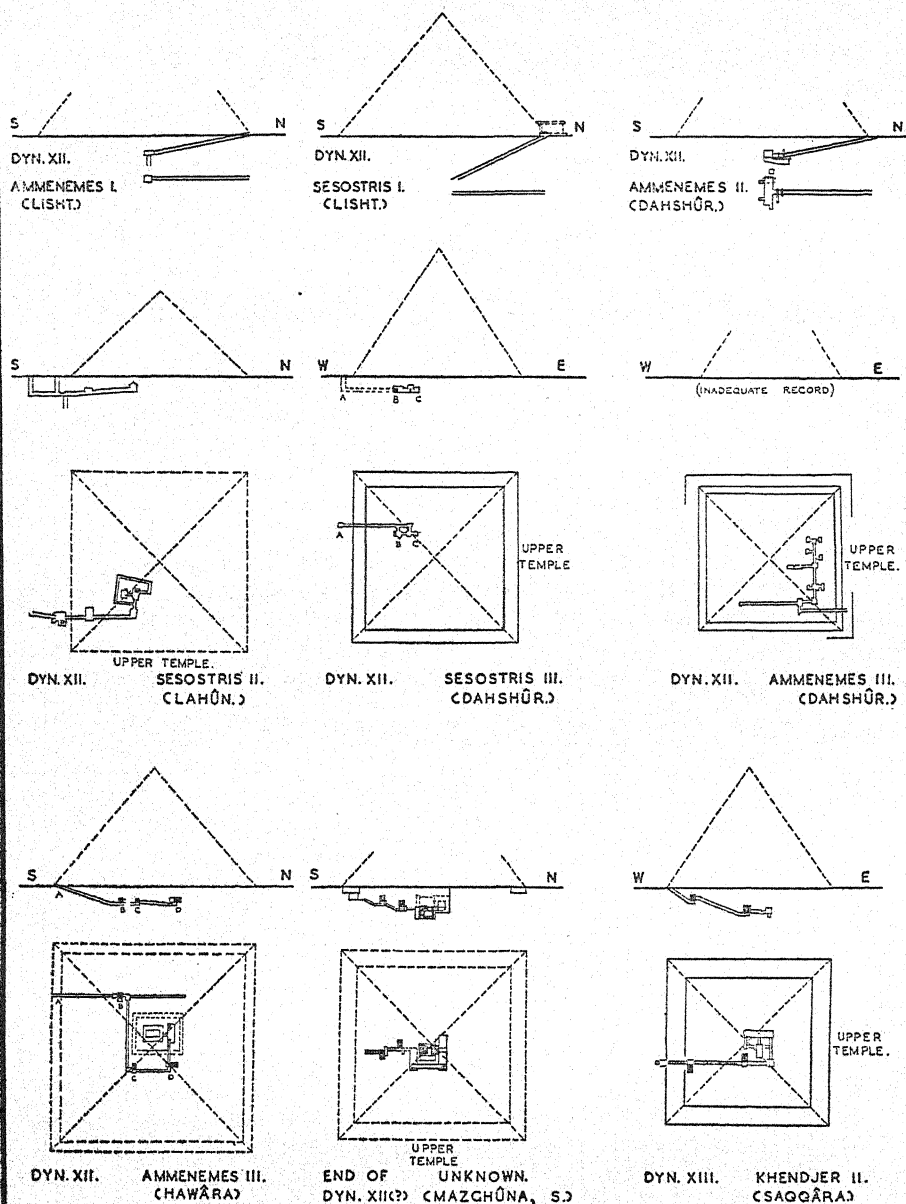
Arranged along the west side of the pyramid are six tombs of the queens or princesses.

The Mentuhotpes were followers of the sun-cult of Heliopolis, and they had second names as follows⁹:

Mentuhotpe II :	Nebhepetrē
Mentuhotpe III :	Sankhkarē
Mentuhotpe IV :	Nebtawyrē

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THESE DIAGRAMS ARE NOT DRAWN TO UNIFORM SCALE



DEVELOPMENT OF THE PYRAMID DURING THE MIDDLE KINGDOM.

L. V. Gauthier 1946.

FIG. 4

ORIGINS, DEVELOPMENT AND DECLINE OF THE PYRAMID

IX. PYRAMIDS OF DYNASTIES XII–XIII.

The first king of Dynasty XII was Ammenemes I, whose ruined pyramid is at Lisht, between Saqqâra and the Faiyûm. The complex resembles its Memphite predecessors in consisting of a causeway leading from a probable destroyed lower temple to an upper temple at the western end of which was the pyramid. The latter consisted of a main body of rough limestone blocks cased with fine white limestone. A ramp led from the centre of the north side to the sarcophagus chamber in the approximate centre of the pyramid, and after the burial the ramp was blocked with huge blocks of granite. One feature seems to have been borrowed from the complex of the Mentuhotpes at El Deir el Bahari: the tombs of the princesses were arranged in rows along the west side of the pyramid.

Ammenemes I was succeeded by his son Sesostri I who likewise built a pyramid at Lisht. The causeway leading to the upper temple was lined on either side with Osirid statues placed in niches, an arrangement evidently inspired by the Osirid statues placed along the causeway of the pyramid-temple of Mentuhotpe II–III at El Deir el Bahari.

Instead of building their pyramids by constructing a core with added walls, Sesostri I and his successors built them by constructing a series of walls of limestone or mud-brick radiating from the centre to the four corners and to the middle of each side, with or without further sub-divisions, filling the interspaces with sand and rubble (Fig. 25). The whole was finally cased with fine white limestone.

Ammenemes II built his pyramid at Dahshûr. The entrance was on the north side and led to the usual downward ramp ending in a short horizontal passage containing two portcullis slabs of granite, the outer being vertical like those of the pyramids of the Old Kingdom, and the inner being transverse and heralding the new custom of transverse portcullis slabs which obtained from now onwards. Behind the inner portcullis slab was the sarcophagus chamber at the west end of which was the sarcophagus of sandstone.

Ammenemes II was succeeded by Sesostri II, who built his pyramid at Lahûn. Whereas the monarchs of the Old Kingdom relied chiefly on the vastness of their tomb-coverings for protection from robbery, Sesostri II and his successors relied chiefly on a complex system of subterranean passages and shafts. Entrance to the pyramids of Sesostri II and III was by a shaft instead of the usual inclined ramp; and one wonders if this change was due to the employment of Cretan workmen, who left their pottery near the pyramid of Sesostri II at Lahûn.

The pyramid of Sesostri III, who succeeded Sesostri II, is at Dahshûr. Entrance was obtained from a pit outside the west face, and led ultimately to a sarcophagus chamber at the western end of which was a sarcophagus of red granite decorated with 'palace-façade' panelling.

South of the pyramid and outside the temenos wall were the remains of six wooden barques, each about 10 metres long, apparently a survival of the large rock-hewn barques near some of the Old Kingdom pyramids.

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Sesostris III also had a remarkable tomb or cenotaph at Abydos ; it was a rock-tomb and included a complicated system of subterranean passages, ramps, and pits, and the main passage continued as a decoy for some distance past the position of the sarcophagus chamber.¹⁰

His successor Ammenemes III built one pyramid at Hawâra in the Faiyûm, and another at Dahshûr. The Hawâra pyramid had an entrance on the south face, which led downwards by a flight of steps to a vestibule just beyond the upper part of which was a transverse portcullis slab, which when slid aside led to two passages, one being a decoy. The other led to further chambers roofed with transverse portcullis slabs behind which were further passages which finally reached the sepulchral chamber. The latter was hollowed out of one block of quartzite and roofed with three slabs of the same material.

The entrance to the Dahshûr pyramid of Ammenemes III was on the east side but near the south end, and led to a network of passages and vestibules, including a ' blind ' passage resembling that in the Hawâra pyramid, and finally to the sarcophagus chamber which was some distance east of the centre. The chamber contained a fine red granite sarcophagus.

The two destroyed pyramids of Mazghûna, south of Dahshûr, have been attributed to Ammenemes IV and Sebeknefru, the successors of Ammenemes III and the last monarchs of Dynasty XII. The substructure of each consisted of a series of passages, vestibules, flights of steps, and transverse portcullis slabs, eventually leading to a built-in sepulchral chamber of quartzite. The entrance to the south pyramid was in the middle of the south side ; the position of the entrance to the north pyramid was not determined beyond doubt. A remarkable feature of the temenos wall of the south pyramid was that it was of the wavy type which appears to have existed only in Dynasties XII and XIII.

The only known pyramid certainly of Dynasty XIII is that of Khendjer II s.e. of the Mastabet Fara'ôn, Saqqâra. The entrance was on the west side and led to a network of steps, passages, vestibules, and transverse portcullis slabs, finally reaching the sepulchral chamber, which was hewn out of a single block of quartzite and roofed with two flat slabs.

South-west of the pyramid of Khendjer II is the ruined pyramid of an unidentified monarch, the superstructure of which is destroyed, but the substructure provides the finest known example of the interior of a Middle Kingdom pyramid, and is still accessible. The entrance, which is on the east side, leads to a network of stairways, passages, vestibules and transverse portcullis slabs, leading finally to two sarcophagus chambers, each of which contained a sarcophagus of quartzite. The pyramid was enclosed in a temenos wall of the wavy type already noted at the south pyramid of Mazghûna.

In conclusion, the distinguishing features between Old and Middle Kingdom pyramids may be thus summarised :

ORIGINS, DEVELOPMENT AND DECLINE OF THE PYRAMID

Old Kingdom Pyramids

Core of coarse limestone.

Casing of fine white limestone.
Vertical portcullis slabs.
Entrance on north side.
Sarcophagus in large chamber.

Pyramid Texts on walls (Dynasties v and vi).
Sarcophagus and portcullis slabs often of granite.
Usually one temenos wall, straight and of limestone.

Large rock-hewn barques sometimes associated.
Protection from robbers tends to be based on vastness and solidity of superstructure.

Middle Kingdom Pyramids

Core of mud-brick from Sesostri I onwards.

Casing of fine white limestone.
Transverse portcullis slabs.
Entrance on any side.
Sarcophagus often fits exactly into a small chamber or comprises a built-in tomb.

No Pyramid Texts; short texts on pyramidia.
Sarcophagus and portcullis slabs often of quartzite.
Often two temenos walls, the outer being of mud-brick and sometimes sinuous, the inner being of limestone.
Small wooden barques sometimes associated.

Protection from robbers tends to be based on complexity of substructure.

X. AFTER THE MIDDLE KINGDOM.

Of the royal tombs from the latter part of Dynasty XIII to the end of Dynasty XVI, little is at present known. There is evidence, from the Abbott Papyrus relating to tomb robberies,¹¹ that six obscure kings of Dynasty XVII were buried in small tombs crowned with pyramids of mud-brick at Deir Abu'l Naga, near the Valley of the Kings at Thebes. These mud-brick pyramids are believed to have had a steep angle of slope (60°-66°) and each was crowned by a pyramidion. The pyramidion from one of these tombs (that of Sekhemre Wapmaat Intef) is in the British Museum, and coffins from these pyramidal tombs are in the British Museum, the Louvre, and Cairo Museum.

It has already been noted how the massiveness of the Old Kingdom pyramids, and the complexity of substructure of those of the Middle Kingdom, were alike of no avail in preventing the robbery of the tombs. This fact led Thutmose I to institute a radical change in tomb architecture early in Dynasty XVIII. Realising the futility of having a pyramid the existence of which cannot be concealed, he built his tomb in a remote valley now world-famous as the Valley of the Kings near Thebes. He concealed his tomb by hewing it out of a precipitous rock-face, and having an entrance as insignificant as possible. Instead of placing his funerary temple adjacent to the tomb, which would have betrayed the position of the latter, he built it some three or four kilometres away on the western bank of the Nile. Thus was created a style of funerary architecture to which the Valley of the Kings owes its fame. The tombs were hidden

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away in the folds of a desolate valley, while the funerary temples were separated from them by a vast desert mountain ; physically they were separated but spiritually they were one.

The pyramidal form of tomb did not however cease, for it survived in the tombs of many of the nobles of Dynasties XVIII and XIX on the west bank of the Nile, especially at Deir el Madîna. These tombs comprise the following elements :

- (a) a substructure including a stairway leading down to a burial chamber ;
- (b) a superstructure embodying a small chapel with a large entrance, built into a small mud-brick pyramid crowned by a pyramidion of stone. The walls of the chapel are decorated with offering formulæ and funerary scenes.

Good examples of these tombs are Nos. 291, 359, 360 and 361 at Deir el Madîna.

During Dynasty XXV the monarchs of the Merôitic Kingdom, between Aswân and Khartûm, revived the pyramidal form for royal tombs. The essential features of their pyramids are :

- (a) a steep-sided pyramid with an offering-shrine adjoining ;
- (b) a stairway descending from outside the offering shrine to two or three chambers beneath the pyramid ;
- (c) a temenos wall enclosing both pyramid and offering shrine.

The Merôitic pyramids are all much smaller than those of the Old and Middle Kingdoms.

During Ptolemaic times there was yet another revival of the pyramid as a tomb. Ptolemaic pyramids are known to have been built in Egypt although no examples have survived.¹² An excellent example of Roman pyramid exists however in Rome¹³ ; it is the tomb of a nobleman named Cestius who died just before 12 B.C. There were formerly at least two other pyramids in Rome.¹⁴

The origins, development, and decline of the pyramid as a form of funerary architecture occupied a period of some three thousand years ; but according to the evidence at present available it ended at the close of the Ptolemaic period.

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REFERENCES

1. REISNER, G. A. *Tomb Development*, 1936, p. 201.
2. BORCHARDT, L. *Einiges zur Dritten Bauperiode der Grossen Pyramide bei Gise*, 1932.
3. JÉQUIER, G. *Mastabet Faro'un*, 1928, plate IV; A. Fakhry, *Sept Tombeaux de Gizeh*, 1935, pp. 4-7.
4. HASSAN, S. *Giza IV*, 1943, p. 15 and passim.
5. *Annales, S. A.*, XLII, 210-214.
6. QUIBELL, A. A. *Saqqâra I*, 1907, p. 23.
7. MORET, A. *Nile and Egyptian Civilisation*, 1927, p. 233.
8. GARDINER, A. R. *The Admonitions of an Egyptian Sage*, 1909, pp. 32; 53-4; 56.
9. WINLOCK, H. E. *Der el Bahri*, 1942, Index.
10. AYRTON, CURRELLY AND WEIGALL. *Abydos III*, 1904, pp. 11-28.
11. WINLOCK, H. E. In *J.E.A.* x, 217-277.
12. NOSHY, I. *The Arts in Ptolemaic Egypt*, 1937, p. 39.
13. PLATNER AND ASHBY. *Topographical Dictionary of Ancient Rome*, 1929, p. 478; Nardini, F., *Roma Antica*, 1818-20; Vol. IV ('Intorno alla Piramide Die Cestio,' by O. Falconieri); *Nuova Antologia*, May-June 1910, pp. 193-204.
14. LANCIANI, R. *Pagan and Christian Rome*, 1895, p. 271.

EGYPTIAN PYRAMIDS

LITERATURE

1. TO THE END OF DYNASTY III

- REISNER, G. A. *Tomb Development*, 1936.
PETRIE, W. M. F. *Royal Tombs of Earliest Dynasties*, I, II, 1900-1.
LAUER, J-P. *Pyramide à Degres*, I, 1936, pp. 1-7; III, 1939, pp. 53-54
BORCHARDT, L. *Die Entstehung der Pyramide*, 1928.
EMERY AND SAAD. *Tomb of Hor-Aha*, 1939.

2. DYNASTIES IV, V & VI

- BORCHARDT, L. Various works.
JÉQUIER, G. *Le Mastabat Faro'un*, 1928.
HASSAN, S. *Excavations at Giza*, Vol. IV, 1943.
JÉQUIER, G. *Le Monument Funéraire de Pepi II*, Tome I, 1936.
REISNER, G. A. *History of the Giza Necropolis*, Vol. I, 1942.

3. DYNASTIES VII-X (FIRST INTERMEDIATE PERIOD)

- JÉQUIER, G. *La Pyramide d'Aba*, 1935.

4. DYNASTIES XI-XIII (MIDDLE KINGDOM)

- NAVILLE, E. *XI Dynasty Temple of Deir el Bahari*, I-III, 1894-1913.
WINLOCK, H. E. *Excavations at Deir el Bahri*, 1911-1931 (New York, 1942).
'The Eleventh Egyptian Dynasty' (*Journal of Near Eastern Studies*, Oct. 1943, pp. 249-283).
DE MORGAN, J. *Fouilles à Dahchour*, 1895-1903.
PETRIE, W. M. F. *Kahun, Gurob, and Hawara*, 1890; *Hawara, Biahmu, and Arsinöe*, 1889.
JÉQUIER, G. *Deux Pyramides du Moyen Empire*, 1933.

5. DYNASTY XVII

- WINLOCK, H. E. In *Journal of Egyptian Archaeology*, x, 217-277.

6. PYRAMIDAL TOMBS OF THE NEW KINGDOM

- BRUYÈRE, B. *Deir el Medineh*, in *Fouilles de l'Institut Français d'Archeologie Orientale du Caire*, I-XVI, 1924-1939.
DAVIES, NINA M. *Journal of Egyptian Archaeology*, xxiv, 25-40.

7. THE LATE EPOCH

- REISNER, G. A. The Meröitic Kingdom, in *Journal of Egyptian Archaeology*, ix, 1923, 34-78.
REISNER, G. A. *Harvard African Studies*, II, 1918, pp. 1-64.

CHAPTER 4

Construction

'I find one Scruple touch'd upon by Herodotus, Diodorus, and Pliny, which is worth the Discussion, as a Point of some Concernment in Architecture ; And that is, in what manner these Pyramids were built, and with what Art and Contrivance the Stones, especially those vast ones in the first, were conveyed up.'

J. GREAVES. *Pyramidographia*, 1646, pp. 115-6.

I. PRELIMINARY.

(a) *Architects, Sculptors, Artists and Scribes.* Only in a few instances is there definite evidence as to the names and other particulars of the architects and other skilled personnel concerned in building the pyramids.

It is recognised that the vizier and architect Imhotep was the builder of the Step Pyramid of Djoser at Saqqâra, but the available texts do not reveal any other details of his work in connection with that masterpiece of architecture.

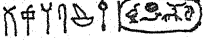


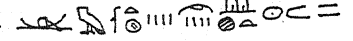
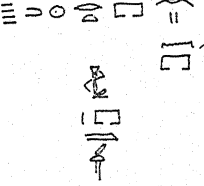

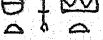
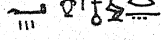
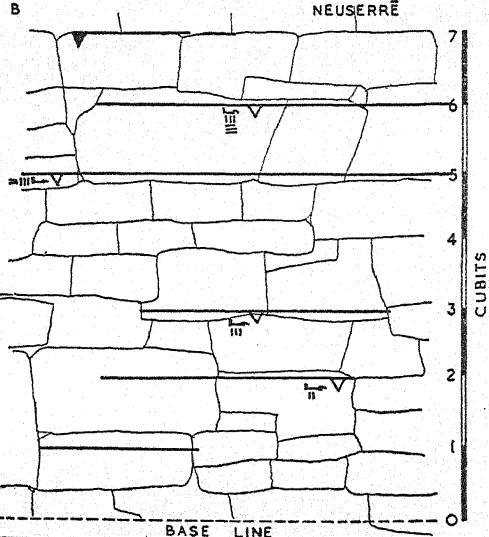
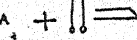


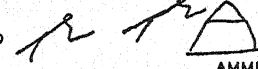

The names of the builders of the pyramids of Gîza and Abu Sîr are as yet unknown.

More information is available concerning the builders of the pyramids of Dynasty VI. An inscription of the 18th year of the reign of Pepy I, in the quarries at Wadi Hammâmât, refers to a master pyramid-builder named Tjetjy.¹ An inscription in the tomb of an architect named Nekhebu at Gîza states that he spent six years in superintending the work on the pyramid of Pepy I, after which that king gave him gold (amulets?), bread, and beer in very great quantity.² In his autobiographical text, Uni stated that he was sent to Ibhet, Elephantine, and Hatnub in order to obtain stone for the sarcophagus, the pyramidion, granite false door and settings, and offering tables for the pyramid complex of Mernerê.³

Middle Kingdom references to pyramid builders are rather scanty. An inscription of Dynasty XII refers to one Meri, architect of a temple of Sesostris I, the gates of which towered heavenward and were of Tura limestone⁴; but it is not known whether this was the temple of the pyramid of that king or one of his other temples (e.g. at Karnak or Heliopolis). British Museum Stela No. 569 records how a man named Sihathôr went to the pyramid of Ammenemes II to superintend the work on 15 statues of hard stone of millions of years; and never had the like happened with any superintendent before.⁵

A large number of other texts (especially tomb inscriptions) refer to royal builders, sculptors, and artists of the Old and Middle Kingdoms, who must

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BUILDERS' INSCRIPTIONS ON THE STONES OF PYRAMIDS.	
<p>1. ORGANISATION OF LABOUR</p> <p>A  KHEOPS</p> <p>B  MYCERINUS</p> <p>C  SAHURĒ</p>	<p>2. DATES.</p> <p>A  = KHENDJER II.</p> <p>B  QUEEN NEIT</p>
<p>3. PROVENANCE OF STONE</p> <p>A  SAHURĒ</p> <p>B  MYCERINUS</p>	<p>4. INDICATIONS OF HEIGHT.</p> <p>A  SAHURĒ</p> <p>B  NEUSERRE</p>
<p>5. DESTINATION OF STONE</p> <p>A  SNEFRU, S.</p> <p>B  SNEFRU, S.</p> <p>C  SNEFRU, S.</p> <p>D  AMMENĒMES II.</p> <p>E  NEUSERRE</p>	

L.V. Grinsell 1946.

FIG. 5

CONSTRUCTION

Translations of Inscriptions on FIG. 5.

1. A. The crew, 'The white crown of Khnmw-Khuf is powerful,' the craftsmen gang.
B. The crew, 'Menkaurē (Mycerinus) is drunk.'
C. The crew, 'Beloved is Sahurē.'
2. A. Brought downstream in 4th year, 4th month of Inundation, day 12.
B. Second month of winter, day 14 . . . of the house . . . work on the building, on the west side.
3. A. Tura quarries.
B. The desert workshop.
4. A. Three cubits above the ground level.
B. 1, 2, 3, 5, 6 and 7 cubits above the base (of the pyramid).
5. A. This side up (?).
B. To be taken away (?).
C. (To be used for) the inner facing-walls of the pyramid (?).
D. Place on the pyramid.
E. For the royal tomb (*per nwb*).

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surely have had a hand in the building and decoration of pyramids and their associated temples and other buildings ; but as the texts do not specifically mention their work on pyramids they cannot here be introduced.⁶

The duties of scribes in connection with pyramid construction were important. They had to maintain records of the quantities of stone quarried and transported, the amount of labour employed, and the wages of the employees ; and they had to write on the quarried blocks of stone details of the crews or gangs of workmen by whom they were quarried, the date of quarrying, the parts of the pyramid complex for which they were destined, and many other details. Scribes of a superior grade were employed for inscribing the Pyramid Texts on the walls of the interiors of the pyramids from the end of Dynasty v to the end of Dynasty vi. Some important but fragmentary scribes' accounts relating to the pyramids of Abu Sîr are still incompletely published.⁷

(b) *Organisation of the Workmen.* The unskilled labour employed in stone quarrying, transport of stone, and pyramid-building was excellently organised, and thanks to the researches of Mr Alan Rowe⁸ the following brief outline can be given.

The number of men employed on the larger pyramids must have run to many thousands, and according to Herodotus the builders of the pyramid of Kheops 'worked always by ten myriads of men during each period of three months.'⁹

The largest group of workmen appears to have been the crew which is believed to have comprised between 800 and 1,000 men. These crews had various names of which the following examples must suffice :

The crew, Kheops excites love.

The crew, the Horus Medjedu (*i.e.* Kheops) is the purifier of the two lands.

The crew, the White Crown of Khnmw-Khuf (Kheops) is powerful.

The crew, Mycerinus is drunk.

The crew, Mycerinus excites love.

The crew, Sahurē is beloved.

The crew, Neuserrē excites love.

These crew-names often occur written in red on the stones used in building the pyramids.

Each crew was divided into four watches, each of which contained 200-250 men. The watches had nautical names, such as 'starboard watch,' 'larboard watch,' 'bow watch,' 'stern watch,' etc., as recorded in incised hieroglyphs at the entrances to the storerooms in the tomb of Mererukai at Saqqâra (Dynasty vi).

The watches were in turn divided into small gangs of 10-50 people, which had names of which 'Antelope gang' and 'Ibis gang' (both from the upper temple of Mycerinus) are examples.

CONSTRUCTION

(c) *Appliances.* The chief appliances available to builders during the Old and Middle Kingdoms were as follows :

- (i) *Copper chisels*, for quarrying limestone.
- (ii) *Built causeways*, for facilitating transport of stone from quarry to pyramid.
- (iii) *Sledges, rollers, and sleepers*, for transporting stones.
- (iv) *Water*, for levelling.
- (v) *Construction-embankments* of mud-brick, for assisting in placing the higher courses of masonry ; remains of such embankments of mud-brick and rubble have been found at Maidûm,¹⁰ Lisht (Ammenemes I),¹¹ and Gîza (near the pyramid of Khephren¹²).
- (vi) *Levers*, for assisting in placing the stones into position.
- (vii) *Plumb-rules*, one of which was found near the pyramid of Sesostris I at Lisht.
- (viii) *Set-squares*, one of which was likewise found at Lisht.¹³
- (ix) *Ropes*.
- (x) *Saws*, used for cutting hard stones (*e.g.* note the saw-marks on the sarcophagi of Kheops and Khephren and behind the slate triads of Mycerinus. The length of the saw-marks on the sarcophagus of Kheops shows that the saw used was at least 8 ft. long.
- (xi) *Dolerite pounders*, for working and dressing granite and other hard stones ; they abound in the vicinity of all granite workings
- (xii) *Tubular Drills*, for hollowing the insides of hard stone sarcophagi and for working hard stones generally. That used in hollowing the sarcophagus of Kheops was 4.2 ins. diameter, as shown in two places where it was allowed to run too deep.
- (xiii) *Wooden moulds*, for making mud-bricks.
- (xiv) *Plaster*, for filling gaps and holes in masonry. The plaster was tinted red if used to fill flaws in red granite.
- (xv) *Facing-Plates* smeared with red ochre were, according to Petrie,¹⁴ applied to the casing stones to test their smoothness. Protuberances were shown by the red ochre adhering to them.

(d) *Unit of Measurement.* The unit of measurement used during the Old and Middle Kingdoms was the Royal cubit, the hieroglyph for which is an outstretched arm (↯) the length of which is approximately one cubit (20.612 inches). It was divided into seven palms each of which had four fingers.

Markings in cubits are often visible on the backing stones behind the casing of pyramids and on unfinished walls of interiors of tombs and temples.

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The tendency to round figures is discernible in the following list of measurements of Old Kingdom pyramids :

Dynasty	King	Locality	Base	Height
			In Cubits	
III	Djeser	Saqqâra,	205 × 225	115 (?)
	Snefru	Dahshûr, s.	360	168
	Snefru	Maidûm	275	174
	(?)	Dahshûr, n.	410 (approx.)	200 (?)
IV	Kheops	Giza	440	280
	Djedefrê	Abu Rauwâsh	200 (approx.)	?
	Khephren	Giza	410	272
	Mycerinus	Giza	200	125
	Shepseskaf	Saqqâra	200 × 150	112 (?)
V	Sahurê	Abu Sir	150	89 (90 ?)
	Neferirkarê	Abu Sir	200	133
	Neuserrê	Abu Sir	150	100
	Unis	Saqqâra	128 (?)	(?)
VI	Teti	Saqqâra	122	(?)
	Pepy II	Saqqâra	150	100

(e) *Plans, Models, and Calculations.* Although no plans of pyramids have so far come to light they were certainly made. A plan of the tamarisk grove at the pyramid-temple of Nebhepetrê Mentuhotpe II was found by the expedition of the Metropolitan Museum of Art, New York.¹⁵ A plan on papyrus of the tomb of Ramesses IV is in Turin Museum, and one on limestone of the tomb of Ramesses IX is in Cairo Museum. These give some indication of the probable character of an architect's plan of a pyramid, and are useful in providing the ancient Egyptian names for the different parts of the tomb.

It is most likely that the architects of the great monuments of ancient Egypt made use of scaled models, but no such architects' models have yet been found.

Mathematical problems connected with pyramids occur in two important papyri and have been studied by T. E. Peet¹⁶ and W. W. Struve.¹⁷ The problems in the Rhind Mathematical Papyrus are :

- (i) to find the batter or slope-angle, given the base length and vertical height (problems 56 and 58),
- (ii) to find the vertical height, given the base length and the batter (problem 57).

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The method, as illustrated by problem 57, is as follows :

‘Problem : Pyramid 140 cubits long and 5 palms 1 finger in its batter.
What is its vertical height ?

Solution : Divide 1 cubit by twice the batter, which amounts to 10 palms 2 fingers ($10\frac{1}{2}$ palms).

Reckon with $10\frac{1}{2}$ to find 7, for 7 palms = 1 cubit.

Two thirds of $10\frac{1}{2}$ is 7.

Reckon with 140, for this is the length of the side.

Make $\frac{2}{3}$ of 140, namely $93\frac{1}{3}$.

This is the vertical height thereof.’

The problem in the Moscow papyrus deals with a truncated pyramid.

The method used by the ancient Egyptians for expressing the batter or slope-angle of the sides of a pyramid or other structure was to state it in terms of a vertical rise of one cubit on a horizontal base of so many palms and fingers. They had no other means of expressing angles. Thus the batters of the more important Old Kingdom pyramids are expressed as follows (those of Middle Kingdom are nearly all too ruined to be measured) :

Dynasty	King	Locality	Batter	
			In Palms & Fingers	In Degrees
III	Snefru	Maidûm	5 p. 2 f.	$51^{\circ} 51'$
	(?)	Dahshûr, N.	7 p. 1 f.	$43^{\circ} 40'$
IV	Kheops	Gîza	5 p. 2 f.	$51^{\circ} 51'$
	Khephren	Gîza	5 p. 1 f.	$53^{\circ} 08'$
V	Mycerinus	Gîza	5 p. 3 f.	$51^{\circ} 10'$
	Sahurê	Abu Sîr	5 p. 3 f.	$50^{\circ} 36'$
	Neferirkarê	Abu Sîr	5 p. 1 f.	$53^{\circ} 08'$
	Neuserrê	Abu Sîr	5 p. 2 f.	$51^{\circ} 51'$
	Pepy II	Saqqâra	5 p. 1 f.	$53^{\circ} 08'$ (approx.)
	Udjebten	Saqqâra	3 p. 1 f. (approx.)	$65^{\circ} 00'$
	Neit	Saqqâra	4 palms (approx.)	$61^{\circ} 00'$
	Iput	Saqqâra	4 p. 3 f. (approx.)	$55^{\circ} 00'$ (approx.)
XII	Sesostris I	Lisht	5 p. 3 f.	50° (approx.)
XIII	Khendjer II	Saqqâra	4 p. 3 f. (?)	$55^{\circ} 00'$

In the Cairo museum is a diagram showing the measurement of a curve, found near the Step Pyramid at Saqqâra and believed to be of Dynasty III.¹⁸

(f) *The Work of the Seasons.* The ancient Egyptian year was divided into three seasons, each of which consisted of four months :

- (i) *Inundation*, from about 19th July till 15th November ; during this time most of the Nile Valley was submerged.
- (ii) *Winter*, from about 16th November till 15th March.
- (iii) *Summer*, from about 16th March till 13th July.

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Between 14th and 18th July were the five epagomenal days which made the year of 365 days, each month containing 30 days.¹⁹

The broad divisions of work connected with large scale building operations were to some extent seasonal and may be stated as follows :

- (i) *Quarrying* of the fine white limestone from the cliffs east of the Nile was mostly done during winter and summer ; the bulk of the quarrying for granite, alabaster, and schist in Upper Egypt was done during the winter as the intensity of the summer heat prevented much from being done during the hot season.
- (ii) *Transport* of fine white limestone across the river Nile was mostly done during the inundation season in order to minimise land transport. Transport of the Upper Egyptian stones downstream seems to have been done in early summer, just after the close of the quarrying season.
- (iii) *Building* of the pyramids and other monuments is therefore likely to have been most active during the months following the inundation, when the stones quarried the previous summer had been transported to the west bank of the Nile, and when the heat of the summer was over. It is possible that the division of the workmen into boat-crews and watches may have originated from the transference of the crews of the transport barges to assist in the building operations.

The conclusion seems to be that, although quarrying, transport, and building went on all through the year, the quarrying was done mostly in the winter and summer, the transport mostly during the inundation, and the building mostly during the winter. These tendencies are substantially borne out by the dates given in the quarry inscriptions and on the stones.

II. FROM QUARRY TO PYRAMID.

(a) *Sources and Quarrying of the Soft Stones.*

- (i) *Coarse Limestone* was normally obtained from the immediate vicinity of each pyramid. Coarse limestone quarries used for the Giza Pyramids have been located around the Sphinx, south-east of the pyramid of Mycerinus, and south-east of the pyramid of Khephren. Quarries of coarse limestone for the Dahshûr north pyramid are located south-west of that pyramid, to which they are connected by causeways. There is textual evidence that the coarse limestone for both of the Lisht pyramids was obtained from a quarry near the north Lisht pyramid.²⁰
- (ii) *Fine Limestone* was used extensively for casing the pyramids, lining their passages and chambers, and lining the walls and pavements of the temples and causeways. The main source of supply was from the Moqattam-Tura-Ma'sara caves between Cairo and Helwan, which were worked from Dynasty III onwards.

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QUARRIES and PYRAMIDS of OLD and MIDDLE KINGDOMS.

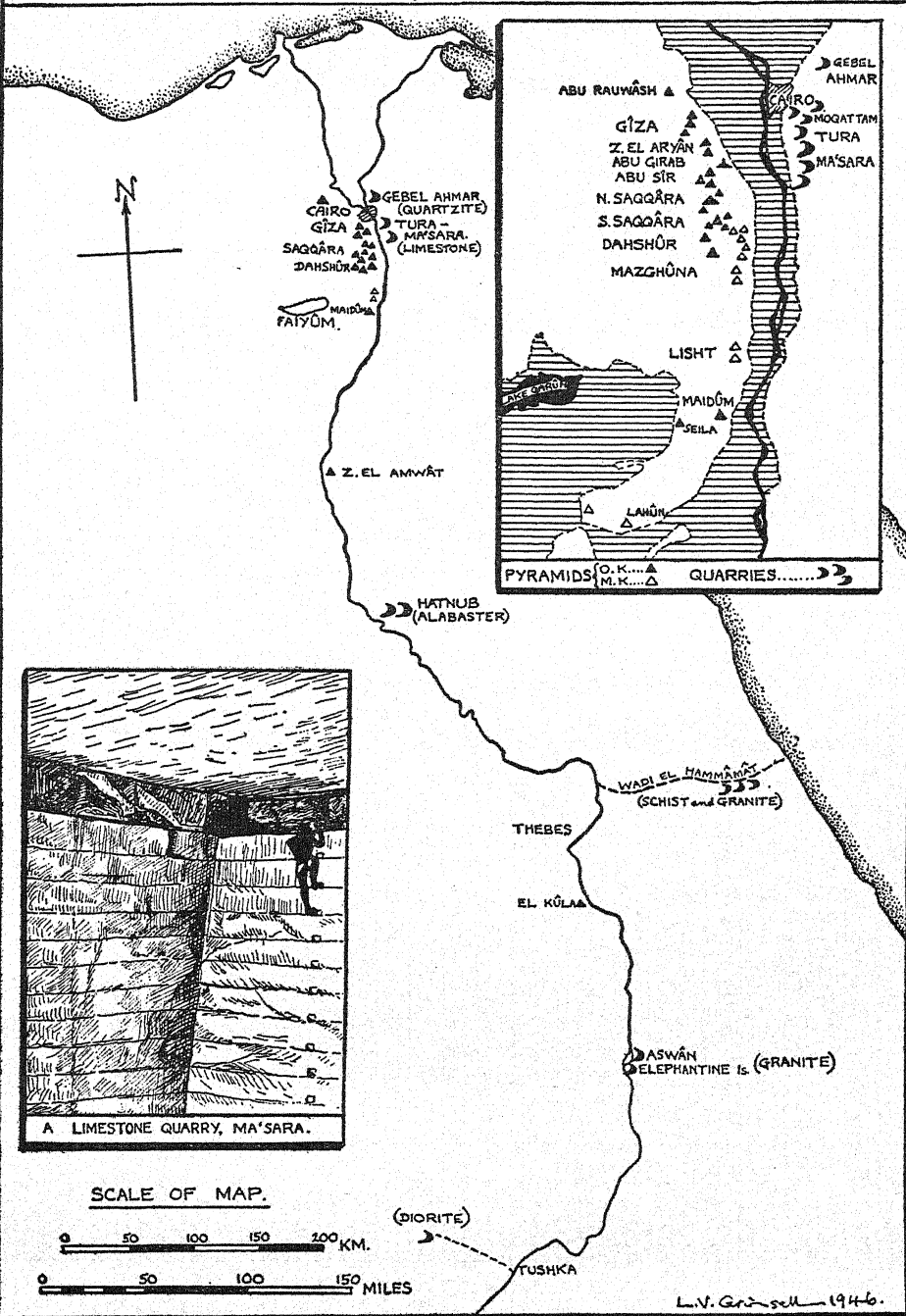


FIG. 6

EGYPTIAN PYRAMIDS

The history of these caves may be briefly related. Examination of the limestone facing of the pyramids and associated buildings of Dynasty III leaves little or no doubt that the quarries in question were being worked during that period. The earliest textual references to the Tura Quarries are of Dynasty VI. Among the titles of one Meryrē-'ankh of this Dynasty was 'Overseer of the Tura Quarries.'²¹ A papyrus letter of Dynasty VI found at Saqqāra and now in the Cairo Museum (No. 49623) was written by an officer in charge of Tura quarrymen, and complains of delay in issuing clothes to his men.²² It is unfortunate that any Old Kingdom inscriptions that may have existed in the quarries themselves must have been destroyed by later quarrying.

During the Middle Kingdom the quarries were extensively worked, and it is to this period that the earliest known surviving quarry inscription belongs. It described 'the opening of the quarry-chambers anew in order to quarry good white stone of Tura for the buildings of this priest, of millions of years,'²³ and was written during the reign of Ammenemes III.

During the New Kingdom and later, the quarries continued active, and about a dozen hieroglyphic inscriptions on the quarry walls are referable to these times. The working of the quarries has continued until the present day, and is still flourishing.

Although most of the caves are now closed to the public, a few are still accessible, notably two examples at the Bektashi Monastery south of the citadel at Cairo, and two or three examples at the north end of the Tura group, accessible by road from Tura-Cozzika Railway Station.

The following features of the caves are of interest :

1. Rows of notches arranged vertically on the walls ; these were footholds for the workmen to climb to the top of the quarry faces.
2. Ledges beneath the ceiling at the top of each quarry face, where the quarrymen squatted in order to extract the stone.
3. Parallel striae on each quarry face, caused by the use of copper chisels and adzes.
4. Lines, symbols, and inscriptions on the ceilings, giving directions for quarrying and probably describing the progress of work.

The ancient quarrying of fine limestone was divided into two main operations :

1. Working downwards with chisels or adzes on the four vertical sides of the block to be extracted.
2. Striking the horizontal blows along the base in order to detach the block ; this was a comparatively easy process.

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There is some evidence that convicts and prisoners of war constituted a considerable portion of the quarry labour. Convict labour is still used at Tura, and two mutilated inscriptions of Ahmose I (Dynasty XVIII) refer either to the *Fenkhû* (Phoenicians) or to cattle belonging to the *Fenkhû* as having been employed in the quarries.²⁴

- (iii) *Alabaster* was used for flooring the lower and upper temples of Khephren, and the upper temples of Unis and Teti. It was especially in demand for altars (that of Neuserrê at Abu Girâb) and offering tables (Mernerê, Udjebten, and many others).

The quarries at Hatnub about 25 km. east of El Amarna were the main source of supply during the Old and Middle Kingdoms. They contain inscriptions of the reigns of Kheops, Teti, Pepy I and II, Mernerê, Sesostris I and III, and Ammenemes II.²⁵ The inscription of Uni, in Cairo Museum, described his journey to Hatnub in order to get an alabaster offering table for the pyramid of Mernerê.²⁶

There was also a small alabaster quarry in the Wadi Garâwi about 8 km. south-west of Helwan, which was worked during the Old Kingdom.²⁷

The method of quarrying alabaster was similar to that for limestone, the chief tools used being probably copper chisels and adzes.

(b) *Sources and Quarrying of the Hard Stones.*

- (i) *Granite*, used very occasionally during Dynasties I and II, and for the main burial chamber of the Step Pyramid of Djoser at Saqqâra. From Dynasty IV onwards its use became common, notably in the pyramid complexes of Kheops, Khephren and Mycerinus. It was nearly always used for the portcullis slabs and other important parts of the interior of the pyramids of the Old Kingdom. Where roof-spans were more than about 3 metres, as in the so-called King's chamber of the pyramid of Kheops, granite had to be used as limestone tends to crack if used for roofing such spans.²⁸ When there was difficulty in getting granite, blocks of limestone were sometimes used instead and painted to resemble granite (*e.g.* the false door of Udjebten; the tomb of Mehu at Saqqâra, and many other instances).

The source of supply of nearly all the granite used in ancient Egyptian building was the neighbourhood of Aswân, especially Elephantine Island. The beautiful red variety was most frequently used, but occasionally black granite was employed, notably for lining the walls of the north corridor of the upper temple of Mycerinus. The pyramidia were always of a black or grey-black stone, either granite, basalt, or schist.

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Among the Old Kingdom references to the quarrying of granite from Elephantine Island are two of special interest. That relating to the quarrying and transport of granite palmiform columns for the pyramid temples of Unis occurs in the form of reliefs and inscriptions on the walls of the causeway of that king's pyramid at Saqqâra.²⁹ The inscription of Uni in Cairo Museum includes an account of his journey to Elephantine to get a granite false door, offering slab, and doorway settings and thresholds for the pyramid complex of Mernerē.³⁰

Although there are great numbers of hieroglyphic rock inscriptions in the Aswân area, those so far published do not include references to the granite quarries, and there can be little doubt that the quarry inscriptions have been destroyed by later workings.

The rounded surfaces of some of the untrimmed granite casing blocks of the pyramid of Mycerinus show that they were derived from boulders from the river at Aswân. On the other hand the large slabs used *e.g.* for roofing the King's chamber of Kheops must have been quarried.³¹

The ancient quarries south of Aswân are famous for the unfinished obelisk still in its original quarry, which exhibits the characteristic laboriously pounded faces and shows a few of the masons' guide lines and other symbols in red ochre. In the vicinity of the ancient quarries are large numbers of pounders of greenish-black dolerite, used in quarrying and working all kinds of hard stone. It is certain that saws were also used in working granite and other hard stones, as saw-marks often occur on them.

- (ii) *Basalt.* Black or dark grey basalt was used for flooring the upper temples of Kheops, Userkaf, Sahurē and Neuserre. The material may have come from Gebel-el-Qatrâni in the Faiyûm.³²
- (iii) *Schist* was often used for statues and offering vases, but seldom for building material. The main source of supply was the celebrated quarries of Wadi Hammâmât between Qus and Quseir, which contain some 250 hieroglyphic inscriptions, including examples of the reigns of Pepy I, the Mentuhotpes, Ammenemes I and III, Sesostris III, and many of later date. Among the inscriptions of the reign of Pepy I is a reference to a pyramid builder named Tjetjy.

The quarrying of schist and other hard stones was sometimes accompanied by curious ritual. The inscription of Intef (Dynasty XII), in the Hammâmât quarries, relates how he prostrated himself before all the gods and goddesses of the desert, including Min and Mut, and burned incense to them, in order to obtain their assistance in guiding him to a large and sound block of stone, the like of which had never been brought since the time of the gods.

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On other occasions animals were sacrificed after suitable stone had been found.

The numbers of men sent on some of the quarrying expeditions to Wadi Hammâmât often ran into thousands. Ammenemes III for example sent an expedition of 2,000 troops, 20 necropolis soldiers, 30 sailors, and 30 quarrymen to those quarries in order to quarry and hew ten statues, each of which was 5 cubits (about $8\frac{1}{2}$ feet) high.³³

- (iv) *Quartzite*. Although quartzite was used in Dynasties IV and VI for statues of Djedefrē and in the upper temple of Teti), it was not employed extensively until Dynasties XII and XIII, when it was used for the sarcophagus of Ammenemes III at Hawâra, and for portcullis slabs, sarcophagus chambers, and/or sarcophagi of Middle Kingdom pyramids between Saqqâra and Mazghûna.

The main source of supply was most likely the quarries at El Gebel el Ahmar, about 10 kilometres north-east of Cairo, where hieroglyphic inscriptions of late date existed until recently. On the site there are still quarry-faces marked with red guide-lines to aid the quarrymen, and there is an unfinished recumbent royal statue. Dolerite pounders are common in the vicinity.

North of Aswân is the remnant of another ancient quartzite quarry.³⁴

- (v) *Sandstone*. Sandstone was seldom used in the building of any parts of the pyramid complexes, except at the pyramid-temple of Mentuhotpe II-III at El Deir el Bahari. There is evidence however that the sandstone quarries of the Western Nubian Desert, about 65 kilometres north-west of Abu Simbel were worked during the reigns of Djedefrē, Djedkarē-Isesi, Ammenemes I, Sesostri I (period of co-regency), and Ammenemes II and III.³⁵

The earliest inscriptions in the sandstone quarries of Gebel Silsila, between Luxor and Aswân, are of Dynasty XVIII.

(c) *Sources of Other Materials.*

- (i) *Copper*, for implements used in quarrying, probably all came from the mines in the vicinity of Serâbât el Khâdim and Wadi Maghârah in south-eastern Sinai where there are many inscriptions of Old, Middle and New Kingdoms.
- (ii) *Gold* was used extensively for the royal grave furniture, nearly all of which was looted long ago. The articles from the tomb of Hetepheres (mother of Kheops) now in Cairo Museum may be taken as a sample of what every royal tomb of Old or Middle Kingdom must have contained. The source of supply was the quartz veins running through the granite, especially between Qena and Quseir in Upper Egypt.

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- (iii) *Faïence* was used in Dynasty III in the blue tile chambers of the monument of Djoser at Saqqâra. It is believed to contain natron from the Wadi Natrûn.³⁶
 - (iv) *Woods*, imported largely from Syria, included ebony (from Dynasty I), juniper (from Dynasty III), fir (from Dynasty V), yew (from Dynasty VI) and cedar (from the Middle Kingdom and probably earlier). A coffin of cypress (Dynasty III) was found in the Step Pyramid at Saqqâra.³⁷
- (d) *Transport* of stone from quarry to pyramid, which may have been done with the assistance of oxen, involved the following operations :—
- (i) Transport from the quarry to the water's edge. This process was often facilitated by constructing an embankment or causeway. Such embankments or causeways still exist at the granite quarries of Aswân,³⁸ the alabaster quarries of Hatnub,³⁹ the basalt quarry in the Faiyûm,⁴⁰ and the limestone quarries in the Moqattam-Tura-Ma'sara area.⁴¹ The stones were moved on sledges as depicted on a stela from the Tura caves.⁴² At the river's edge there was most likely a quayside (*mryt*) on which the blocks of stone were unloaded before embarkation.
 - (ii) Transport by river to the western bank. In the case of the transport of fine white limestone from the Moqattam-Tura-Ma'sara area this merely involved the short journey across the river, and may have been done by a type of barge of which models were found near the pyramid of Queen Neit.⁴³ Most of the transport across river was done during the inundation season in order to minimise land transport.

Accounts of journeys downstream with stone from the Upper Egyptian quarries have survived mainly in the inscription of Uni, who gave a detailed account of his expeditions to Upper Egypt to get materials for the pyramid complex of Mernerē at Saqqâra (part II, Chapter 5). He transported the alabaster from Hatnub in a cargo boat 60 cubits long and 30 cubits broad, built in 17 days. For details of other boats used, the reader is referred to the works of C. Boreux⁴⁴ and Clarke and Engelbach.⁴⁵

On the walls of the causeway of Unis at Saqqâra are reliefs and inscriptions of 'the coming (of the ships) from Elephantine Island loaded with red granite columns and cornice-blocks for the pyramid called "the Places of the Son of Rē Unis are beautiful"'. Carl V. Sølver suggests that advantage was taken of a rising Nile for transport of stone from Upper Egypt, in order to minimise the risk of the vessel grounding on the way.⁴⁶

On the western bank of the river there were quaysides for the unloading of the stone. A block of fine white limestone from the Pyramid of Sesostris I at Lisht was inscribed, 'Brought from the

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Rekhet landing stage.⁴⁷ It is possible that some of these quaysides may have later served the lower temples of pyramids, as quays have been found near the lower temples of Sahurē, Neuserrē, and Unis.⁴⁸

- (iii) Transport from the western bank of the river to the site of the pyramid was effected by sledges of acacia or cedar, evidences of which have been found near the pyramids of Sesostris III at Dahshūr⁴⁹ and Sesostris II at Lahûn.⁵⁰ It seems probable that most of the stone was taken to each pyramid along the causeway connecting the sites for the upper and lower temples (Fig. 7).

III. FOUNDATIONS.

- (a) *Preparation of the Pyramid Area.* In certain instances, as at the pyramids of Abu Rauwâsh and Lahûn, and also at the tomb of Khentkawes at Gîza, the tomb superstructure was sited on a natural rock massif, which enabled a superstructure of the desired size to be constructed with a considerable saving of labour. In these instances the only levelling required consisted of dressing the natural rock surface for the reception of the masonry to be added.

In other cases a sloping surface has been levelled at great expense and labour in order to provide a suitable base. This has been done at the pyramid of Khephren, where the desert surface has been cut away considerably on the north-west part and built up on the south-east.

It has been suggested that the process of levelling was assisted by banking up the square base-area and flooding it, and then marking the water level on the inner sides of the bank. The plane of the base of the pyramid of Kheops slopes upwards from north-west to south-east to the extent of six inches, and this could have been caused if a slight north-west breeze was blowing at the time of the checking of the levelling by flooding.⁵¹

After the levelling had been completed, the whole base area was often paved with slabs of fine white limestone. This is well seen around the base of the pyramid of Kheops, although it is thought that the paving does not extend over the whole area. Sometimes the paved base-area extends outside the pyramid to form an exposed pavement, as at the pyramid of Sesostris I at Lisht, where the paving stones were joined together by dovetail cramps.⁵²

- (b) *Foundation Deposits.* Our knowledge of the foundation deposits of pyramids is derived almost entirely from those of the Middle Kingdom. They consist mainly of specimens of the materials used in the construction of the pyramid complex, inscribed sometimes with the names of the king and his pyramid.

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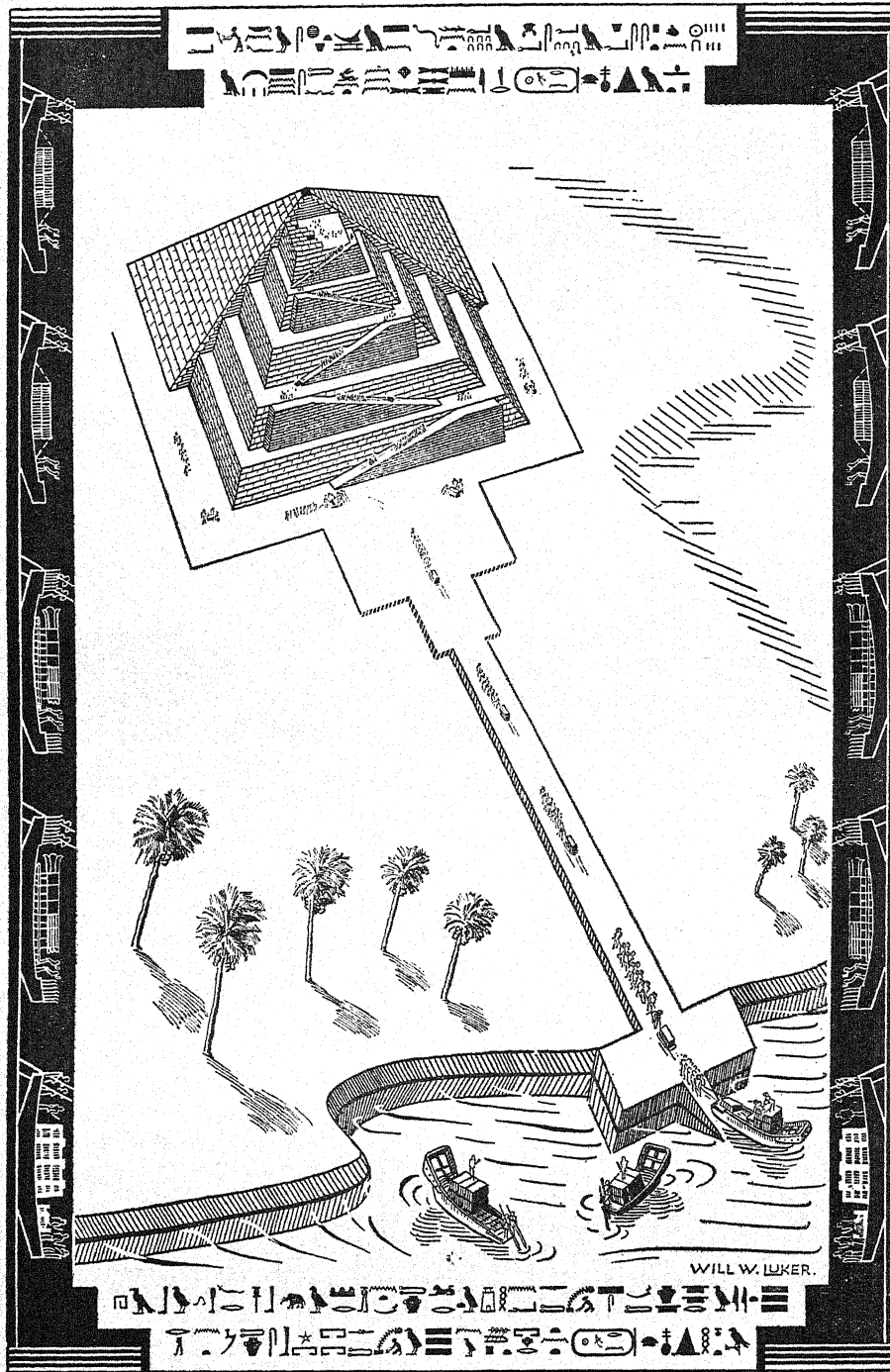


FIG. 7. A TYPICAL PYRAMID UNDER CONSTRUCTION.

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Translation of Inscriptions on FIG. 7.

Bottom : His majesty sent me to Elephantine to bring therefrom a granite false door together with its offering-tablet, and doors and settings of granite ; to bring granite doorways and offering-tablets for the upper temple (?) of my mistress (?), 'The Pyramid, Mernerē shines and is beautiful.'

Top : I hewed for him a cargo boat in acacia wood of 60 cubits in its length, 30 cubits in its width, constructed in 17 days in the third month of summer ; although there was no water on the sandbanks (the Nile was not in flood ?), I landed in safety at 'the Pyramid, Mernerē shines and is beautiful.'

(Both extracts are from the *Inscription of Uni*).

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Foundation tablets of brick, metal, stone and wood, bearing the name of Nebhepetrē Mentuhotpe, were found in the pyramid-temple of that king at El Deir el Bahari.⁵³

Beneath the south-west corner of the pyramid of Ammenemes I was a foundation deposit consisting of an ox-skull, some small and badly broken pottery vases and saucers, and six clay bricks. Each brick contained a tablet inscribed with names of the king and his pyramid; two tablets were of copper, two of faience, and two of limestone.⁵⁴

Beneath the north-west, south-west, and south-east corners of the pyramid of Sesostris I were foundation deposits of food offerings, pottery, and bricks containing tablets of some of the materials used in the construction of the pyramid and temple. The tablets were of wood, metal, faience, and alabaster, and were inscribed with the name and titles of the king and the name of his pyramid, 'Sesostris Surveying the Two Lands.' From the overlapping of the different objects it was determined that the meat offerings were dropped in first, then the pottery, and then the bricks. In the south-east corner there were two deposits, one of which was probably inserted when the pyramid was completed.⁵⁵

The pyramid of an unknown king of Dynasty XIII, south-west of that of Khendjer II, contained foundation deposits of coarse pottery and models of copper and bronze implements.⁵⁶

- (c) *Foundation Ceremonies.* Fragments of reliefs from a granite door-jamb of Khasekhemuy and from the solar temple and pyramid complex of Neuserrē, when studied in the light of more complete representations of later date (as at Edfu), provide a clear idea of the main episodes of the foundation ceremonies for a pyramid or other structure of Old or Middle Kingdom. These episodes were :

- (i) Pegging the ground and stretching the cord ;
- (ii) Breaking the ground surface (usually done four times) ;
- (iii) Sprinkling of sand ;
- (iv) Making of bricks (done four times at Abu Girâb) ;
- (v) Laying the bricks.

The last two episodes may have been a survival from predynastic and Thinite times, when tombs were made of brick before the invention of stone masonry.

The ceremonies appear to have been performed by the king, with the assistance of goddesses, sem-priests, ritualists and others.⁵⁷

IV. THE SUBSTRUCTURE.

The first step in the construction of the pyramid consisted of hewing out of the bedrock, with copper chisels, adzes, and other implements, those parts of the passages and chambers which were to be below ground level. Good

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examples of these, open to the sky, are to be seen at Abu Rauwâsh and the unfinished north pyramid of Zâwyet el 'Aryân. The latter is of special interest as an example of an unfinished pyramid in which the substructure was nearly completed but the superstructure not even begun. The impressive stairway, ramp, passage, and sarcophagus chamber had been hewn out of the bedrock, and sarcophagus chamber had been paved with granite and received the fine red granite sarcophagus; then for some unknown reason the work was abandoned.

It is well to distinguish between the '*open trench*' substructure (Abu Rauwâsh and Zâwyet el 'Aryân) and the '*tunnelled*' substructure, seen in the lower passage and chamber of the pyramid of Kheops, the pyramids of Kheops' queens, and the pyramids of Mycerinus and his queens.

- (a) *The Sarcophagus Chamber* was usually wholly or partly in the substructure. The most important exception is the pyramid of Kheops, in which the position of the sarcophagus chamber was altered from the substructure to the superstructure in the course of building. It was generally lined with granite (Kheops and Mycerinus) or fine white limestone (as in the pyramids of Dynasties v and vi containing Pyramid Texts).

The roofing was :

- (i) *Corbelled* as in the Dynasty III pyramids at Dahshûr and Maidûm.
- (ii) *Pointed*, as in the pyramids of Dynasties v and vi.
- (iii) *False-arched*, with slabs placed end to end and hollowed concave on their undersides, as in the chambers of Mycerinus and Shepseskaf.

It is evident that the roofing blocks were cut to shape, arranged, and numbered before being placed in position; indeed the roofing blocks of Djeser and Kheops have their markings and numbering still visible; but those of Djeser were reversed in orientation when laid.

In view of the great weight of superincumbent masonry which had to be borne by the roof of the sarcophagus chamber one or other of the following devices was used :

- (i) Relieving chambers, as above the king's chamber in the pyramid of Kheops.
- (ii) Relieving slabs, often of enormous thickness, as above most of the chambers with pointed roofs of Dynasties v and vi.

Architects' inscriptions on the walls of the antechamber and sarcophagus chamber of the tomb of Shepseskaf (Mastabet Fara'ôn) which read 'upper side of the paving stone, true line,' almost certainly show that the walls were built before the floor-slabs were inserted.⁵⁸

The presence of the sarcophagus in the unfinished chamber of the north pyramid of Zâwyet el 'Aryân, shows that the sarcophagus was dragged down the smooth rock-hewn ramp, which had a narrow stairway on each side as a foothold for the workmen, before the ramp was walled with stone slabs. That this was the usual custom is shown by

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comparing the dimensions of sarcophagi with those of completed passages and ramps. The sarcophagus of Queen Neit (Dynasty VI) is actually wider than the passage, while the horizontal or other passages in the pyramids of Kheops, Khephren, Mycerinus, Unis, and Pepy II are too narrow to have permitted the movement of the sarcophagus, the clearance space being either non-existent or less than 10 centimetres.

- (b) *The Antechamber, Serdab, Horizontal Passage and Vestibule* presented no constructional problems other than those encountered in building the sarcophagus chamber.
- (c) *The Portcullis Slabs* of the Old Kingdom were normally of granite and let down vertically, although that in the Dahshûr pyramid of Snefru was let down obliquely. During the Middle Kingdom the portcullis slabs were frequently of quartzite and were nearly always slid transversely across a slightly inclined gap over the passage which they were intended to block.

Before being let down, the Old Kingdom portcullis slabs were supported on piles of stones, as seen in unfinished mastaba tombs of Dynasty III at Maidûm.⁵⁹

As a protection for the tomb, portcullis slabs had little effect as the robbers always worked their way under, above, or around them.

- (d) *The Ramp* normally slopes downwards from the entrance to the horizontal passage of the pyramid. The angle of slope was usually between 15 and 30 degrees, although it was only 10 degrees in the pyramid of Ammenemes I at Lisht. Two important reasons for the downward-sloping ramp were to facilitate the lowering of the sarcophagus and canopic chest, and to assist in the blocking of the means of ingress by sliding down monoliths after the deceased had been interred.

The pyramids of Dynasties III and IV had their entrance high up in the superstructure, and the ramp was therefore at least partly in the superstructure. From Dynasty V onwards the whole length of the ramp was in the substructure. In either case it had nearly always a flat roof, and the walls and roof were often lined with slabs of red granite or limestone.

V. THE SUPERSTRUCTURE.

(a) *Interior (Old Kingdom Pyramids).*

- (i) *The Core.* In the earliest pyramids, such as the Step Pyramid of Djoser at Saqqâra and the pyramid of Snefru at Maidûm, the substructure was covered by a mastaba-like edifice, either rectangular (Djoser) or square (most other examples), having a slope-angle of 75–80 degrees. The Step Pyramid was formed around this core by the addition of masonry both vertically and horizontally, giving the impression of a series of mastabas one above the other. Until the early part of Dynasty XII the core of the pyramids was usually of blocks of coarse limestone, faced with rather larger blocks.

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- (ii) *The Intermediate Walls.* The royal tombs of Dynasty II were conjecturally reconstructed by Reisner with a series of walls outside of the mastaba-core. From Dynasty III onwards these walls occur in every pyramid sufficiently ruined to display its structure until the end of the Old Kingdom and probably the beginning of the Middle Kingdom. According to Petrie⁶⁰ they were 'for binding the structure, and in a traditional succession from the primitive mastaba.'

The intermediate walls were placed one outside the other, the outer ones being lower than the inner, on all four sides of the core, thus producing a stepped-pyramidal form. The slope angle of each wall was about 70 degrees, but steeper slopes occasionally occur.

Each intermediate wall consists normally of two parts :

1. The body of small blocks of coarse limestone.
2. The casing of large blocks of finer limestone.

The Step Pyramid at Saqqâra is essentially a very high mastaba core surrounded by a series of walls. The tops as well as the sides of these walls were cased with fine white limestone blocks which were dressed and smoothed into the finished stepped structure.

The intermediate walls of Snefru at Maidûm were likewise cased with fine white limestone which was dressed smooth although later hidden behind the final casing of the pyramid ; for in this instance the gaps between the steps were filled in to form the earliest known true pyramid. From Dynasty IV onwards the facing of the intermediate walls was left rough.

The construction of the various walls probably proceeded together at the same time and more or less at the same level.

Good examples of exposed intermediate walls are to be seen at the Maidûm pyramid of Snefru, the small pyramids near those of Kheops and Mycerinus at Gîza, and the pyramids of Abu Sir.

- (iii) *The Backing Stones.*

After filling in the triangular gaps between the steps of the intermediate walls, it was necessary to add well-laid masonry which was to constitute a backing for the casing of the pyramid. These backing stones are nearly always of fine white limestone. In some instances the fitting together of the backing stones does not fall far short of the quality of jointing of the casing blocks.

The outer faces of the backing-stones were often inscribed with graffiti written thereon by the architects, builders' scribes and others. Some of them are of the nature of vertical and horizontal lines with extended triangles, and measurements in cubits ; these are evidently for measuring the progress of the work and checking the batter of the pyramid. Other graffiti, such as one on the west

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side of the pyramid of Neit at S. Saqqâra,⁶¹ record the state of advancement of the building on a particular date. Others give the names of the crews of workmen employed, the name of the king whose tomb was being built, and other details (Fig. 6).

(b) *Interior (Middle Kingdom Pyramids).*

Instead of having a core, intermediate walls, and backing stones, the pyramids of the Middle Kingdom were nearly all built on a different principle, the body of the pyramid being constructed of a series of walls radiating from the centre, their interstices being filled with mud bricks or other materials.

- (i) *The Interior Walling* consisted of two walls crossing at right angles parallel to the sides of the pyramid, which divided it into four sections. Diagonal walls caused a subdivision into eight subsections, and often there were additional walls which made sixteen divisions in all. At the pyramid of Sesostri^s I at Lisht the walls were of limestone; at the pyramid of Sesostri^s II at Lahûn the lower parts of the walls were of limestone and the upper parts of mud-brick; in most other Middle Kingdom pyramids the walls were entirely of mud-brick.
- (ii) *The Filling* of the divisions between the interior walls was of mud-bricks or sand and rubble.
- (iii) *Backing Layers and Backing Stones.* Between the body of the pyramid and the casing was a series of carefully laid bricks or 'backing layers' and backing stones, which were necessary in order to receive the limestone casing blocks.
- (iv) *Making of Mud-Bricks.* The manufacture of mud-bricks in ancient Egypt was similar to that of to-day. The method consists of getting a quantity of Nile mud or alluvium, mixing it with water until the resulting mass becomes plastic, and adding sand or chopped straw to give coherence and to prevent the bricks from warping when drying. The wooden mould (of which ancient and modern examples are identical) is rinsed with water to prevent the mud from sticking to the inner sides, and is then filled with the mud mixture. The resulting bricks are left in the sun for four or five days to dry, after which they are ready for use. By this method, which is best carried out by subdivision of labour (one mixing the mud, one man moulding, and one laying the bricks to dry) 4,000-6,000 bricks per day can be produced by three men.

The length of the bricks in the Middle Kingdom was twice their breadth, which enabled them to be laid 'headers and stretchers.'

It remains to add that the ancient Egyptian word for mud-brick was *tb* or *db*=the Coptic τωωβε=Arabic *toob*, hence the English *adobe*=brickwork.

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(c) *Exterior (Old and Middle Kingdoms).*

- (i) *The Casing.* The casing of most pyramids was of fine white limestone, but granite was used for the first sixteen courses of that of Mycerinus, and for the lowest part of the casing of the pyramids of Khephren, Djedefrē, and Neferirkarē.

The casing stones were first of all dressed to a smooth surface on their under sides, and then they were placed in position with the aid of levers. Their tops were next dressed, and marked with incised lines to indicate the position of the stones to be superimposed. The front sides of the casing blocks were dressed last of all, and they were dressed from the apex of the pyramid downwards. This is shown at the pyramid of Mycerinus, where several of the red granite casing blocks are undressed and still have the projecting lugs to receive the positioning levers. On account of the premature death of Mycerinus the dressing of the casing of his pyramid was left uncompleted. The probability that limestone casing blocks were likewise dressed after being placed in position is revealed by a study of the pyramids of Djoser⁶² and Kheops⁶³; but Petrie considered that they were sometimes dressed before being placed in position.⁶⁴

The possible use of facing-plates to test the smoothness of the casing blocks has been noted on page 55.

In the setting of casing blocks a gypsum mortar was often used, but as a lubricant and not as a cement.⁶⁵

Pyramids of the Middle Kingdom sometimes have their casing blocks joined together with dovetail-cramps as at the pyramid of Sesostri III at Dahshūr.

It has already been noted that during Dynasty III the masonry of the superstructure of pyramids tended to be inclined downwards from the casing towards the core. From Dynasty IV onwards the masonry was usually laid in horizontal courses on a level plane.

- (ii) *The Pyramidion.* The apex of the pyramid was formed by a single block or pyramidion. In the Old and Middle Kingdoms this pyramidion was probably always of a black or grey-black stone, especially black granite (Ammenemes III) or basalt (Khendjer II). At other times pyramidia were occasionally of white limestone (Intef, Dynasty XI, in British Museum; and the pyramidia of some of the private tombs of Dynasties XVIII and XIX at Deir el Madīna, Thebes). Pyramidia usually have a boss or disc projecting from their base, so that they could be firmly secured on a corresponding hollow cut in the stones on which they were to be placed.

No pyramidia of the Old Kingdom have yet been found; but in his biographical text Uni relates how he was sent by King Mernerē to Ibhet (in Upper Egypt) to bring 'the costly and

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splendid pyramidion for the pyramid called " Mernerē shines and is beautiful ". The Egyptian Museum at Cairo contains nearly all the known pyramidia of Middle Kingdom ; they include the polished black granite example of Ammenemes III (Dynasty XII), and those of Khendjer II, his unknown neighbour, and Menneferrē (Dynasty XIII). The two examples at the foot of the pyramid of an unknown king adjoining the pyramid of Khendjer II are both unfinished and one of them still possesses the red guide lines intended to assist the mason in his work.

VI. THE CLOSING OF THE PYRAMID.

The closing of the tomb against robbers after the king had been buried presented a serious problem to the kings and their architects ; it worried Kheops so much that he was for ever seeking the locks of the Sanctuary of Thoth, ' to make for himself the like thereof for his " Horizon " (*i.e.* pyramid).'⁶⁶

The chief methods of closing the pyramids after the interment were as follows :

- (a) *Sealing the Sarcophagus.* The sarcophagi of Unis and Pepy II, and probably others, were intended to receive a wooden coffin let into it by ropes, grooves for which are still visible in those sarcophagi.

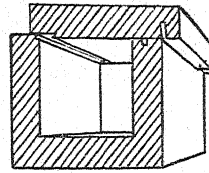
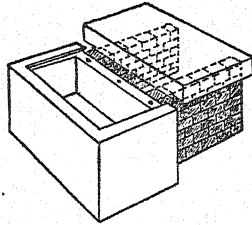
Previous to the burial, the sarcophagus lid rested on mud-brick walls beside the sarcophagus (Old Kingdom), or was supported above it by piles of stones (Middle Kingdom).

The lid was fixed on to the sarcophagus by an ingenious method combining oblique bevelling of three sides with the slotting of the fourth side, the fitting being assisted by the use of a resinous substance which served as a fixative as well as a lubricant. From a glance at Fig. 8 the difficulty of breaking into a sarcophagus closed in that manner will be readily understood.

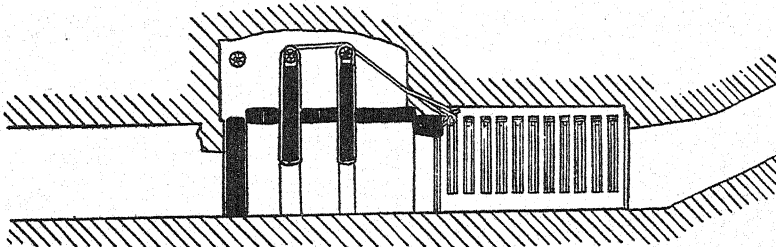
- (b) *Sliding the Portcullis Slabs.* The horizontal passage leading from the sarcophagus chamber nearly always contained between one and three portcullis slabs. In the Old Kingdom they were of granite and dropped down vertically ; in the Middle Kingdom they were often of quartzite and slid across a slightly inclined transverse plane. In each case their object was to block the horizontal passage against intruders.

The methods of lowering the vertical portcullis slabs are as yet not fully understood. Borchardt⁶⁷ suggested that they were sometimes suspended and subsequently lowered by a pulley and palm-log device. In other instances they were propped up by stones until the interment had been made, and then gradually lowered by removing the stones, assisted by levering. The latter was certainly the method intended to be used in the unfinished mastabas at Maidūm, the portcullises of which were never lowered, and were still propped up by stones when discovered by Petrie.⁶⁸

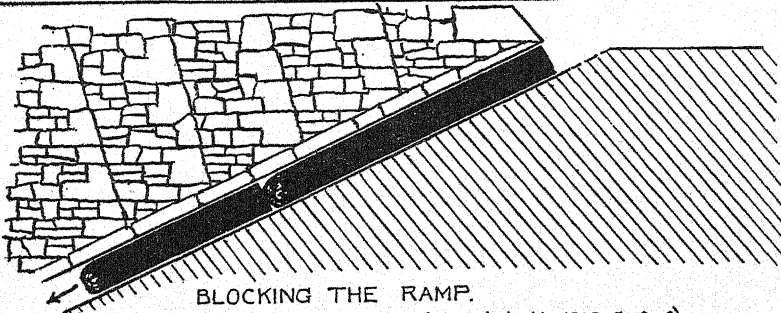
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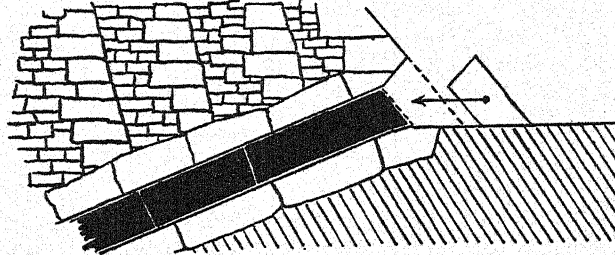
SLIDING THE LID ON THE SARCOPHAGUS.
(After U. Hölscher. *Chephren*, 1912, Abb. 51, page 63).



LOWERING THE PORTCULLIS SLABS.
(After L. Borchardt + H. Ricke. *Beiträge zur Ägyptischen Bauforschung*, 1932, Tafel 12).



BLOCKING THE RAMP.
(Adapted from J.E. Gautier + G. Jéquier. *Fouilles de Licht*, 1902, Figs 2+3).



SEALING THE ENTRANCE.
(Adapted from L. Borchardt. *Ne-user-re*, 1907, Abb. 81, page 101). L.N.G.
1945.

CLOSING THE PYRAMID.

FIG. 8

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- (c) *Blocking the Ramp.* Nearly every pyramid has a ramp extending downward from the entrance to the horizontal passage. After the portcullis slabs in the horizontal passage had been lowered, the ramp was filled with masonry. Nearly all the pyramids have since been reopened and their ramps cleared out, but the following instances of blocked ramps are on record :
- (i) Pyramid of Kheops; Vyse⁶⁹ stated that the sloping passages were blocked with solid masonry for their whole length.
 - (ii) Pyramid of Khephren; Vyse⁷⁰ stated that the lower entrance and passage were 'completely filled up with solid masonry, closely jointed and cemented; the first stone was ten feet long, and the others six or seven.'
 - (iii) Pyramid of Snefru at Dahshûr still has the western entrance and most of the western ramp blocked with masonry.
 - (iv) Pyramid of Ammenemes I at Lisht had the ramp blocked by granite monoliths.⁷¹
 - (v) Pyramid of Sesostris I at Lisht had the ramp filled with obelisk-shaped granite monoliths, each between 7 and 9 metres long. As each was slid down the ramp with the pointed end foremost it crashed into its predecessor, causing the pointed ends to become truncated and fissured.⁷²
 - (vi) Pyramid of Neuserrē at Abu Sir still has two blocking-stones in the ramp.⁷³
- (d) *Concealing the Entrance.* The entrance to each pyramid was concealed from recognition by being blocked with skilfully fitted masonry. Instances of flap-doors, although authentic (as in the pyramids of Snefru⁷⁴ and Kheops,⁷⁵) are most likely posterior to the construction of the pyramids. Concealment of the entrances to pyramids was assisted by the natural tendency for blown sand to accumulate to a much greater extent in the centre of each side than at the corners. This tendency is clearly shown on air-photographs of pyramids (see plates I and XIII).

VII. ASSOCIATED STRUCTURES.

- (a) *Methods of Construction,* as outlined for pyramids in the preceding pages, apply in principle also to the building of the temples, causeways, temenos walls, and other structures forming the pyramid complex, except insofar as the different types of structure required different individual treatment. The special problems involved in the building of the pyramid temples are outside the scope of this work, and the reader is therefore referred to the works of Choisy, Reisner, and Clarke and Engelbach, cited in the literature at the end of this chapter.

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(b) *Sequence of Building.* Evidence of the order in which the various parts of the pyramid complex were built is derived from unfinished pyramid complexes, and from dated inscriptions on some of the stones used. It was broadly as follows :—

- (i) The substructure of the pyramid was hewn out of the rock (example : Zâwyet el 'Aryân, North, where the building of the pyramid advanced little beyond this stage).
- (ii) The sarcophagus was placed in the tomb chamber before the rest of the pyramid was built (example : Zâwyet el 'Aryân north pyramid). In at least one instance (Neit) the sarcophagus was placed in the tomb chamber in a rough-hewn condition.
- (iii) The sarcophagus chamber and other parts of the interior were walled, paved, and roofed (probably in that order).
- (iv) The causeway was then, or perhaps earlier, built for transporting limestone and other materials.
- (v) The pyramid superstructure was added.
- (vi) The casing blocks were dressed after being placed in position.
- (vii) The upper temple was built after the pyramid was nearly completed, as shown by dated stone blocks from the pyramid complexes of Khendjer II⁷⁶ and Ammenemes I.⁷⁷
- (viii) After the causeway had ceased to be used for transport of stone for the pyramid, temenos wall, and upper temple, it was paved, walled, and roofed.
- (ix) The lower temple was probably built last of all.

Although the main building sequence was most likely as outlined above, it should be noted that at the time of the death of Mycerinus his pyramid, upper temple, and lower temple were all well advanced although none had been actually completed. The lengthy process of dressing the pyramid casing must have proceeded while the other parts of the pyramid complex were being built.

(c) *The Time Taken to construct the Pyramid Complex.* It was said by Herodotus⁷⁸ that it took ten years to build the causeway and twenty years to construct the pyramid of Kheops. As there are about 2,300,000 blocks in this pyramid, a building period of 20 years would have implied the quarrying, transport, and laying of over 300 blocks a day throughout each year. Available evidence suggests that the larger pyramids of the Old Kingdom may have taken between 20 and 30 years to build, although about 4 years would have been enough for some of the smaller pyramids of the Middle Kingdom, which were not well built.

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The following table embodies the chief available data :

Dynasty	King	Locality	Volume of Pyramid in cubic metres	Stone or Brick	Latest Dates on Stones or Bricks
III	Snefru	Dahshûr	1,362,500	Stone	(Dates do not give year) 17th numbering (casing)
	Snefru	Maidûm	650,000	Stone	
	(?)	Dahshûr	1,670,000	Stone	
IV	Kheops	Gîza	2,590,000	Stone	12th year
	Khephren	Gîza	2,100,000	Stone	
	Mycerinus	Gîza	260,000	Stone	
V	Sahurê	Abu Sîr	97,000	Stone	13th year (backing stone)
	Neuserre	Abu Sîr	110,900	Stone	
VI	Pepy II	Saqqâra	105,450	Stone	4th year
XII	Sesostris I	Lisht	224,100	Stone	
XIII	Khendjer II	Saqqâra	37,600	Brick and Stone	

VIII. AFTERMATH.

- (a) *Unfinished Pyramid Complexes.* From the preceding account of the building of the pyramid complex, the vastness of the undertaking may be realised. It is not surprising that ' more than once the king failed to complete the enormous complex before death, and was thus thrown upon the piety of his successors, who had all they could do to complete their own tombs.'⁷⁹ Of the north pyramid of Zâwyet el 'Aryân, believed to be Dynasty III, only the sarcophagus chamber and passage were hewn out before the whole tomb was abandoned. Snefru, whose reign lasted probably about 35 years, managed to build two pyramids only one of which is believed to have been completed. The pyramid and associated temples of Mycerinus, which were ambitiously begun largely in granite, were completed in limestone and mud-brick after his death. It is doubtful whether the pyramid of Djedefrê at Abu Rauwâsh was ever finished. Several other pyramids of the Old and Middle Kingdoms (*e.g.* those of Djoser and Khendjer II) tell a similar story.

This tendency to plan vast and elaborate tombs, involving great expense and labour, and to leave them uncompleted, is discernible also in many of the tombs of later periods, notably that of Sethos I and the private tomb of Ramose, both at Thebes.

- (b) *Maintenance.* The drain on the country's resources did not end when the pyramid complex was completed ; for a large staff of priests, overseers, and other officials were maintained, not only during the king's lifetime but also for some centuries after his death. It was inevitable

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that such a state of affairs could not long continue, and the system eventually collapsed for economic and other reasons. Some of the kings were not above rewarding their favourites with funds misappropriated from the mortuary endowments of their predecessors.⁸⁰ With the passage of time each pyramid complex tended to be built smaller and smaller, and more and more crudely, although some exceptions there naturally were. By the latter part of Dynasty XII the main body of pyramids had degenerated to mud-brick, limestone being reserved merely for the internal chambers and passages and external casing. After Dynasty XIII no more pyramids were built, except some very degenerate examples not to be compared with those of the Old and Middle Kingdoms. Very soon afterwards the whole sixty-mile range of pyramids from Gîza to Maidûm had become a desert solitude.

- (c) *Destruction.* In the *Instruction for King Merikarê*, attributed to Dynasty XI, is the following sound admonition to all tomb builders :

‘ Harm not the monument of another, but quarry stone in Royu (Tura). Build not thy tomb out of that which has been overturned.’⁸¹

How necessary this counsel was, and yet how seldom it was followed, can be judged by the following details, which are indicative rather than exhaustive :

One of the clauses in the Dahshûr charter is designed to stop people from looting the pyramid of Menkauhôr (Dynasty V) for building material ; this clause suggests that the pyramid was being looted barely a century after its completion.⁸² The so-called pessimistic literature of the First Intermediate Period makes it clear that the period of anarchy which followed Dynasty VI witnessed the looting of nearly all the Old Kingdom pyramids by an uncontrolled populace rebelling against the old order. They pulled down and smashed many of the statues in the pyramid temples, using their fragments as hammers and for other purposes.

It is equally clear that some of the Middle Kingdom pyramids, notably those of Ammenemes I and Sesostris I at Lisht, were being despoiled during the Second Intermediate Period.⁸³

The New Kingdom tells a vivid story of further destruction. When Thutmose IV decided to place his ‘ dream-inscription ’ in front of the Sphinx at Gîza, he took a red granite architrave from the lower temple of Khephren which he converted into his stela.⁸⁴ A Ramesside temple at Mît Riheina (Memphis) is built of stones from the upper temples of Unis and Teti.⁸⁵ During the same period the stones of the temples and casing of the pyramid of Sesostris II at Lahûn were also being removed for building materials.⁸⁶ In the upper temple of the pyramid of Khendjer II is a hieratic inscription, probably of New

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Kingdom, recording visits to the pyramid of Teti for the purpose of extracting stone, and the writer of the inscription at the same time entreats the gods to 'make twice good the sovereign Teti.'⁸⁷ That tomb robberies were occurring extensively, especially in Upper Egypt, is shown by the papyri dealing with those robberies.⁸⁸

At the present day those who wander among the mosques, old houses, and other Islamic monuments of the old parts of Cairo will find columns and stones with reliefs and hieroglyphs, derived from ancient Egyptian pyramids, tombs, and temples ; these are now being utilised to support the roofs of mosques, as doorway thresholds and lintels, and for other purposes.⁸⁹

Time deals leniently with the monuments of the past ; but it cannot be said that man is equally considerate.

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REFERENCES

1. COUYAT AND MONTET. *Les Inscriptions du Ouadi Hammamat*, 1912, inscr. 103.
2. *J.E.A.* Vol. XXIV, 1938, 1-8.
3. *Inscription of Uni*. Lines 38-44.
4. BREASTED, J. H. *Ancient Records of Egypt*, I, section 509.
5. British Museum. *Hieroglyphic Texts* II, Plate 20.
6. See for example *Ancient Egypt*, XI, 1926, 76-77.
7. *Annales S. A.*, XLII, 117-8; *Aegyptiaca* (Festschrift für Georg Ebers), 1897, pp. 8-15.
8. *Catalogue of Egyptian Scarabs in Palestine Museum*, Addendum A; REISNER, G. A. *Mycerinus*, Appendix E; *Annales du Service des Antiquités*, XXXVIII, 391-396.
9. HERODOTUS. *History*, II, 124 f.
10. BORCHARDT, L. *Die Entstehung der Pyramide*, 1928, pp. 22 f.
11. *Bulletin Met. Mus. Art. New York*, Dec. 1922. Part II, p. 5.
12. HÖLSCHER, U. *Das Grabdenkmal des Königs Chephren*, 1912, 71 f.
13. GAUTIER AND JÉQUIER. *Fouilles de Licht*, 1902, 60-61.
14. *Jour. R.A.I.*, XIII, 1884, p. 98.
15. WINLOCK, H. E. *Excavations at Deir el Bahri*, 1942, p. 50, fig. 5.
16. *Rhind Mathematical Papyrus*. Problems 55-59; see also Chace, Bull and Manning *The Rhind Mathematical Papyrus*, 2 vols., Ohio, U.S.A., 1927-1929.
17. STRUVE, W. W. *Mathematischer Papyrus in Moskau*. Problem 14.
18. *Annales du Service des Antiquités*, XXVI, 197-202.
19. GARDINER, A. R. *Egyptian Grammar*. 1927. Excursus C.
20. *Bulletin Met. Mus. New York*, April 1933, II, p. 6.
21. *Ancient Egypt*, XI, 1926, pp. 76, 77.
22. *Annales du Service des Antiquités*, XXV, 242-255.
23. *Annales du Service des Antiquités*, XI, 257.
24. BREASTED, J. H. *Ancient Records of Egypt*, II, Sections 26-28.
25. ANTHES, R. *Felseninschriften von Hatnub*, 1928, passim.
26. *Inscription of Uni*. Lines 43, 44.
27. SCHWEINFURTH, G. In *Bulletin de l'Inst. Égyptien* for 1885, 2nd Series, No. 6 (1886), pp. 139-145.
28. CLARKE AND ENGELBACH. *Ancient Egyptian Masonry*, 1930, p. 12.
29. Not yet fully published.
30. BREASTED, J. H. *Ancient Records of Egypt* I, 1906, Sections 321-324.
31. PETRIE, in *Jour. R.A.I.*, XIII, 1884, p. 102.
32. CATON THOMPSON. *The Desert Faiyûm*, 1934, I, 136.
33. COUYAT AND MONTET. *Les Inscriptions du Ouadi Hammamat*, 1912, passim., especially inscriptions 19 and 199.
34. LUCAS, A. *Ancient Egyptian Materials and Industries*, 1934, 61.
35. *Annales du Service des Antiquités*, XXXIII, 65-74. Lucas, A., *loc. cit.*, pp. 51 f.
36. ENGELBACH, R. In *Legacy of Egypt*, 1942, p. 133.
37. LUCAS, A. *loc. cit.*, chapter XIV.
38. CLARKE AND ENGELBACH. *loc. cit.*, p. 23.
39. TIMME, P. *Tel el Amarna in 1911*, pp. 37, 43.
40. CATON-THOMPSON. In *Antiquity* I, 1927, pp. 329, 338-9, Plates VII and VIII.
41. PERRING, J. S. *On the Engineering of the Ancient Egyptians* (articles c. 1835), Part IV, p. 4 (copy in Brit. Mus. Library).
42. *Annales, S. A.*, XI, 263.

EGYPTIAN PYRAMIDS

43. JÉQUIER, G. *Les Pyramides des Reines Neit et Apouit*, 1933, 33-40, Plates xxxiii-xxxv.
44. *Études de Nautique Égyptienne*, 1924-25.
45. *Ancient Egyptian Masonry*, 1930, chapter iv.
46. *Mariner's Mirror*, Vol. 26 (1940), 246-7, 253.
47. *Bulletin Met. Mus.*, New York, April 1933, II, p. 7.
48. BORCHARDT, L. *Sahure*, 1910, pp. 7, 9, 31, 34; Borchardt, L., *Neuserre*, 1907, pp. 10, 12; Brunton, G., in *Illus. Lond. News*, Feb. 26th, 1944, pp. 247-249.
49. DE MORGAN. *Fouilles à Dahchour*, Mars.-Juin 1894, pp. 82-83 (Cairo Museum, No. 5460).
50. PETRIE, BRUNTON AND MURRAY. *Lahun*, II, p. 12.
51. CLARKE AND ENGELBACH. *loc. cit.*, p. 62.
52. Dovetail cramps of wood, copper, or other materials were used in Dynasty IV at the lower temple of Khephren, in Dynasty V in the upper temple of Sahurē, and to a considerable extent in the Middle and New Kingdoms.
53. WINLOCK, H. E. *Excavations at Deir el Bahri*, 1942, pp. 51 f.
54. *Bulletin Met. Mus.*, New York, Nov. 1921, Part II, pp. 16 f.
55. *Bulletin Met. Mus.*, New York, April 1933, Section II, pp. 11 f.
56. JÉQUIER, G. *Deux Pyr. du Moyen Empire*, 1933, p. 61.
57. VON BISSING AND KEES. *Rathures*, 1922, pp. 3-21, *J.E.A.*, xx, 183-4.
58. *Orientalische Literaturzeitung*, xxxiv, 1931, p. 401 (Borchardt), and unpublished translation by B. Grdseloff. Compare Borchardt, *Grabdenkmal des Königs Sahurē*, 1910, pp. 90-91.
59. PETRIE, W. M. F. *Meydum and Memphis* III, pp. 6 and 24; plate xvii.
60. PETRIE, W. M. F. In *Ancient Egypt* xv, 1930, 33-39.
61. Found by the author.
62. CLARKE AND ENGELBACH. *loc. cit.*, 86, 100; fig. 95.
63. VYSE. *Gizeh* I, p. 11.
64. *Ancient Egypt*, June 1930, p. 34.
65. LUCAS, A. *loc. cit.*, pp. 73 f.
66. Westcar Papyrus, quoted in Blackman's Ed. of Erman, *Literature of the Ancient Egyptians*, 1927, p. 41.
67. BORCHARDT, L. *Einiges zur dritten Bauperiode der Grossen Pyramide bei Gise*, 1932.
68. PETRIE, W. M. F. *Meydum and Memphis* III, pp. 6 and 24, Plate xvii.
69. VYSE. *Gizeh* I, 287-288.
70. VYSE. *Gizeh* I, 185.
71. GAUTIER AND JÉQUIER. *Fouilles de Licht*, 1902, pp. 93, 94 and fig. 106.
72. GAUTIER AND JÉQUIER. *Fouilles de Licht*, 1902, p. 7.
73. BORCHARDT, L. *Neuserre*, 1907, p. 100, Blatt 17.
74. Sockets for the hinges are still visible at the Dahshûr pyramid of Snefru.
75. STRABO. *Geography*, Book xvii, chapter i.
76. JÉQUIER, G. *Deux Pyramides du Moyen Empire*, 1933, pp. 29, 30. Drioton and Vandier, *L'Égypte*, 1938, p. 303.
77. *Bulletin Met. Mus. Art.*, New York, July 1907, p. 116.
78. HERODOTUS. *History* II, 124 f.
79. BREASTED, J. H. *Development of Religion and Thought*, 1912, p. 75.
80. BREASTED, J. H. *Ancient Records of Egypt*, I, 173 and 241.
81. GARDINER'S translation in *J.E.A.* I, 29.
82. MORET, A. *Chartes d'Immunité* III, 166.
83. *Bulletin Met. Mus.*, New York, Nov. 1921, Part II, 5-19.

CONSTRUCTION

84. BREASTED, J. H. *Ancient Records of Egypt* II, Sections 810-815.
85. *Annales du S. A.*, III, 22-31.
86. PETRIE, W. M. F. *Illahun, Kahun and Gurob*, 1889-90, p. 1.
87. JÉQUIER, G. *Deux Pyramides du Moyen Empire*, 1933, p. 14.
88. PEET, T. E. *The Great Tomb Robberies of the Twentieth Egyptian Dynasty*, 1930.
89. *Bulletin de l'Inst. Égyptien*, 1899, 147-153; *Annales, S.A.* IV, 1903, 101-109; XII, 1911, 284-286; *Recueil des Travaux* XXXV, 45-48.

LITERATURE

In view of the numerous references given in the text, only a short general bibliography is here given.

- PETRIE, W. M. F. 'Mechanical Methods of the Ancient Egyptians,' in *Jour. R.A.I.*, XIII, 1884.
- BORCHARDT, L. Various publications.
- CHOISY, A. *L'Art de Bâtir Chez les Égyptiens*, 1904.
- CLARKE AND ENGELBACH. *Ancient Egyptian Masonry*, 1930.
- CAPART AND WERBROUCK. *Memphis : à l'Ombre des Pyramides*, 1930. Especially chapter 16.
- PETRIE, W. M. F. 'The Building of a Pyramid,' in *Ancient Egypt* xv, 1930, pp. 33-39.
- REISNER, G. A. *Mycerinus*. 1931 (especially pp. 69-75 for the building of temples).
- SETHE, K. 'Die Bau und Denkmalsteine der Alten Ägypter und Ihre Namen' in *Sitzungsberichte der Königlich Preussischen Akademie der Wissenschaften*, 1933, pp. 864-912.
- BUSINK, T. A. *Het Ontstaan der Pyramide*. Batavia, 1934 (mainly a summary of Borchardt's works, written in Dutch).
- LUCAS, A. *Ancient Egyptian Materials and Industries*, 1934.
- DYKMANS, G. *Histoire Économique et Sociale de l'Ancienne Égypte*, Vol. II, 1936. Chapter v contains a good account of the exploitation of mines and quarries during the Old Kingdom.
- PETRIE, W. M. F. *Egyptian Architecture*, 1938.
- RICKE, H. *Bemerkungen zur Ägyptischen Baukunst des Alten Reichs*. Zürich, 1944.

CHAPTER 5

The Pyramid Texts

'The Pyramid Texts as a whole furnish us the oldest chapter in human thinking preserved to us, the remotest reach in the intellectual history of man which we are now able to discern.'

J. H. BREASTED,

Development of Religion and Thought in Ancient Egypt, 1912, p. 84.

I. INTRODUCTION.

(a) *Discovery.*

Until the latter part of the nineteenth century no explorations in the interior of the pyramids had ever revealed hieroglyphic inscriptions, except on one or two sarcophagi. In 1880 however Maspero, working under the aged Auguste Mariette, discovered the first set of Pyramid Texts, inscribed on the walls of the sarcophagus chamber of the pyramid of Pepy I, and ran and told the news to Mariette, who was then seriously ill and within a fortnight of his death. By the time Maspero had concluded his excavations he had found Pyramid Texts in the pyramids of Unis (Dynasty V), Teti, Pepy I, Mernerē, and Pepy II (Dynasty VI).

Between 1920 and 1936 the work of M. Jéquier at South Saqqāra brought to light similar texts in the pyramids of Neit and Udjebten (queens of Pepy II) and Ibi, an obscure king of Dynasty VII.

About 1894 de Morgan found similar texts in a private tomb of the Middle Kingdom at Dahshūr¹; about 1933 some more Pyramid Texts were found in the private tomb of Senusretankh (Dynasty XII) at Lisht, and others have been found in wooden coffins of the Middle Kingdom. Pyramid Texts have also been found in other private tombs of the Middle Kingdom, and in those of Saïtic period.

(b) *Position and Appearance.*

The texts always occupy all or nearly all the space of the north, south and east walls of the sarcophagus chamber, the west wall of which is mostly ornamented with a palace-façade decoration, which usually extends to those parts of the north and south walls surrounding the sarcophagus. Most of the pyramids in question have the texts incised also on the walls of the antechamber and horizontal passage, and some have them even on the walls of the vestibule (Pepy I and II and Mernerē) and ramp (Pepy I).

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The walls containing the texts are always of fine white limestone, and the hieroglyphs are normally in vertical columns the width of which was 8 cm. in the earliest text (Unis) but $4\frac{1}{2}$ –5 cm. in the latest good example (Pepy II).

The texts were first written on the walls in red ochre by scribes. Then they were carefully redrawn in black by draughtsmen, and finally chiselled out by sculptors. The wall was then whitewashed, after which the incised hieroglyphs were inlaid with a blue frit² which has now turned green with age.

The standard of skill displayed in their carving differs widely. Those of Unis and Pepy II reveal the hand of the master craftsman, while those of the obscure Ibi (Dynasty VII) are extremely crude. Mistakes may sometimes be detected covered with plaster or paint with the correct version superimposed.

The best examples of the texts now to be seen are in the pyramids of Unis and Pepy II. Other examples can be seen in the ruined pyramids of Neit, Udjebten, and Ibi, the sarcophagus chambers of which are partly exposed. The superb texts of the Middle Kingdom in the tomb of Senusretankh at Lisht are also accessible.

(c) *Editions and Translations.*

The first comprehensive edition and translation was published in 1894 by Maspero³ who had excavated all the pyramids then known to contain them. His translation was a magnificent piece of pioneer scholarship but is now largely superseded by the work of Kurt Sethe^{4,5}. Unfortunately Sethe died before his task was completed, but it is being finished by his pupils. The fruits of their labours will remain the great work on the subject for many years to come.

The French translation by Speleers⁶, who attended Sethe's lectures on the Pyramid Texts, lacks the scholarship of Sethe but has the advantage of being at present the only complete translation. The same author has also written studies on different aspects of the texts.⁷

Although no connected translation has yet been published in English, the brilliant study by Breasted⁸ provides an excellent synopsis of the contents and meaning of the texts.

II. FUNCTIONS AND STRUCTURE.

(a) *Functions.*

The original function of the Pyramid Texts was to provide the dead king with written descriptions of offerings to be made at his tomb or funerary temple, the idea doubtless being that these offerings would come forth at the bare mention thereof, thus dispensing as much as possible with the presentation of the offerings themselves. To the lengthy list of offerings was added a great quantity of texts calculated to provide the deceased monarch with all the information he could conceivably require concerning the future life and how to attain it.

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These included frequent repetition of assurances that the king was not dead but still living ; that his faculties had been restored to him ; that he had become a god ; that he had use of the morning and evening barques of Rē ; that no serpents or other enemies could do him harm, and so on.

Originally intended only for kings, by the end of Dynasty VI they were being inscribed on the walls of the interior of the pyramids of the queens of Pepy II. By the Middle Kingdom their use had spread to include members of the nobility ; and in the New Kingdom many parts of them became incorporated in the Theban Book of the Dead, which was accessible to a still wider circle.

That the texts were never intended for such adaptation is shown by the incongruities that occur, for example in the queens' pyramids, where references to the male sexual organs have not been altered ; and even the queen's name is accompanied by the masculine demonstrative pronoun.⁹ Similar incongruities occur in Middle Kingdom copies of the texts ; thus Senusretankh, a nobleman of Dynasty XII, is described as having united the two lands.¹⁰

(b) *Methods of Employment.*

It has long been debated which parts of the texts were intended to be read by the priests, and which portions were to be read by the spirit of the deceased.

Large parts of the texts are addressed to the deceased who is referred to in the second person, *e.g.*

' O King — ! Thou hast not departed dead ; thou hast departed living'
(s 134 a).

Such portions were surely recited by the priests at the funeral, and perhaps on other occasions.

The vertical columns of texts in the sarcophagus chamber are so arranged that they could all be read from the standpoint of the sarcophagus. These texts include the lists of offerings, which are always on the north wall. It is therefore evident that all the texts in the sarcophagus chamber were intended to be read by the spirit of the deceased. It has been suggested that he was intended to read them with the aid of the illumination provided by the golden stars with which the ceiling of the sarcophagus chamber is invariably decorated. It is equally probable that the lists of offerings were also recited on all feast days and perhaps on all other days by the priests,¹¹ in the offering shrine of the upper temple, and in the offering shrine above the entrance in the centre of the north side of the pyramid.

Some portions of the texts are addressed to gods, and refer to deceased in the third person, *e.g.* :—

' O ye gods of the south, north, west, and east, honour K. and fear him '
(s 321 a).

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Other portions are addressed to people connected with the cult of the dead, *e.g.* the ferryman :—

‘ if thou dost not ferry over K. then he will leap up and set himself upon the wing of Thoth ’ (s 387 a, b).

Much of the ritual was intended to be recited four times, each corresponding to one of the four pillars of the sky, *i.e.* one of the four cardinal points of the compass, each of which was presided over by a divinity. Many of the offerings were likewise presented four times.¹²

(c) *Structure.*

The texts may be described as a body of literature concerned primarily with promoting the king's welfare in a future life. The literary material used to this end is however derived largely from the following sources :—

- (i) the religion of the sun god Rē of Heliopolis, who travels from West to East in his two barques ; this element is dominant in the early versions (texts of Unis and Teti) ;
- (ii) the religion of Osiris, who was killed by Seth, his body being dismembered, and his bones later reassembled ; this element is dominant in the later versions (texts of Pepy I, Mernerē, and Pepy II) ;
- (iii) the political unification of Upper and Lower Egypt (ss 388, 514, etc.).

(d) *The Chronological Element.*

The sudden appearance of this vast body of texts at the end of Dynasty v implies a preceding period during which they were written on papyrus, and an even earlier time when they were handed down by oral tradition.¹³ They were probably taking shape during the first five Dynasties. It is curious that they appeared on the walls of pyramids when the building of solar temples ceased.

Some indications of the time aspect are evident from a study of the language and the subject matter. The so-called ‘ Cannibal Hymn ’ (ss 393 a–413 c) which described the king devouring the gods, occurs only in the earliest versions (those of Unis and Teti) and was doubtless of much earlier origin. The references to dismemberment and the reassembling of the bones of the deceased may date from a period when that archaic mode of burial was practised.

Parts of the texts are written in styles and forms of language which were already archaic in Dynasty v. Some portions relate to circumstances which had ceased to exist by Dynasty v :—

- ‘ A brick is drawn for thee out of the great tomb ’ (s 572 e), (alluding to the period of the Thinite brick mastabas).
- ‘ Throw off the sand from thy face ! ’ (s 1878 b), (referring to the pre-dynastic sand graves).
- ‘ That spirit is coming, which is in *Ndj.t*, the power that is in the province of Thinis ’ (s 754 c). (Reference to the Thinite civilization of Dynasties I, II (?)).

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(e) *The Geographical Element.*

There is also a geographical aspect, a prolonged study of which may reveal the particular localities from which many of the different items originated. A large number of identifiable places in Egypt are mentioned, Heliopolis, Buto, and Abydos being among the most common.

(f) *The Element of Superstition.*

In the hieroglyphs of the Pyramid Texts, figures of human beings are always mutilated or else eliminated, in order to prevent the signs from possessing any evil powers. Signs of animals were generally intact in the early versions of the Pyramid Texts, but mutilated or eliminated in the later versions. Bird signs always remain intact in the Pyramid Texts, although they were often mutilated in the funerary texts of the Middle Kingdom. Fish signs were always omitted from the Pyramid Texts with a single exception, in s 218 c, as fishes were considered unclean and the priests were forbidden to eat them.¹⁴

III. ANALYSIS OF SUBJECT MATTER.

The task of presenting a brief account of the subject matter of the Texts is one of some difficulty, and the following description is mainly concerned with those portions which relate to the pyramid, the presentation of offerings, and ideas regarding the dead.

(a) *The Pyramid.* The passages in which pyramids are mentioned are few but important. The following extracts are representative :—

‘ Offer this pyramid and this temple to K. and to his *ka* . . . That which this pyramid and this temple contain belongs to K. and to his *ka* ’
(s 1277 b, c).

‘ All the gods who shall cause to be good and enduring this pyramid and this work of K, they shall be equipped, they shall be honoured, they shall become souls, they shall become mighty ’ (s 1650 a–c).

‘ O Great Ennead who are in Heliopolis ! May ye cause K. to flourish ; may ye cause to be enduring this pyramid of K. and this his construction for ever and ever ’ (s 1660 a, b).

(b) *Offerings.* The offerings enumerated (ss 1–134 and elsewhere) consisted broadly of the following items.¹⁵

(i) *Appliances for the dead king's toilet.* These include :—

water ;
incense ;
seven sacred oils ;
natron (four varieties) ;
cosmetics ;
bandages.

(ii) *Tables of offerings, and offering vases.*

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(iii) *Food and Drink, which included the following items :—*

breads and cakes (about 25 varieties) ;
meal and grain ;
meats, mostly beef ;
fowl (geese and pigeon) ;
beverages (beer, wine, and milk) ;
fruits and nuts (several kinds) ;
general (*e.g.* every sweet thing, all the annual vegetables, and everything not already specifically mentioned).

Each offering was described as an ' Eye of Horus ' in order to invest it with magical properties. It is interesting that the offering lists of the Old Kingdom never mention human flesh, and fish was likewise excluded.

The deceased was advised to consume all the offerings himself, and was discouraged from offering them to other people (s 1941 a, b).

The following list of occasions when the offerings were to be presented is given in ss 2117, 2118.

' Ho ! K. ! I have wept for thee ! I have mourned for thee ! I forget thee not ! My heart is not weary of giving thee mortuary offerings every day, at the (feast of the) month, at the (feast of the) half-month, at the (feast of the) " Putting-down-of-the-brazier," at the (feast of) Thoth, at the (feast of) Wag, at the period of thy years and thy months which thou livest as a god.'

(c) *Moral Fitness of Deceased.* Before the king was permitted to assume his place among the gods, he had to satisfy Rē that he was morally fitted :—

' There is no evil which K. has done. Weighty is this word in thy sight, O Rē ! ' (s 1238 a, b). ' K. is justified, the *ka* of K. is justified ' (s 929 a).

The gods who assisted him on his journey were also required to be morally pure :—

' Each god who shall take the hand of this K. to the sky when he goes to the house of Horus which is in the sky, his *ka* shall be justified before Geb ' (s 1327).

In his study of this aspect of the Pyramid Texts M. Moret has shown¹⁶ that whereas in the Pyramid Texts the tribunal is solar, the judges being Ma'aty, Tefen and Tefenet who are children of Rē, and the formulae being from the Heliopolitan writings ; in the Book of the Dead the tribunal is Osirian, the judge being Osiris himself.

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- (d) *Purification and Embalming.* These two ceremonies were of fundamental importance in the funerary ritual.

‘ I come to thee, that I may wash thee and purify thee ’ (s 1684).

Specific reference is made in the texts to purification of the face (s 1983), hands (s 788), feet (s 1247) and entrails.

‘ My entrails have been washed by Anubis ’ (s 1122).

The deceased King’s *ka* was also purified (s 372 a and 789).

Removal of the bandages of mummification is referred to in ss 122, 137, 593 and elsewhere.

- (e) *The King not of human parentage.*

‘ For thou hast no father who can beget thee among human beings ; for thou hast no mother who can bear thee among human beings ’ (s 659c, d).

‘ Thy father was not a man ; thy mother was not a woman ’ (s 2203 ; also s 2002).

- (f) *Transformation to an Everlasting Spirit.*

- (i) *Escapes death.* Emphasis that the king who has passed over still lives is one of the main themes of the texts, and only a few passages need be quoted here :—

‘ K. has not died the death : he has become a spirit in the horizon : he has become enduring in the *Ddwt* (necropolis of Heliopolis) ’ (s 350 b, c).

‘ This K. escapes the day of death as Seth escaped his day of death ’ (s 1467 a).

‘ (Though) thou departest, thou comest (again) ; (though) thou sleepest, thou wakest (again) ; (though) thou diest, thou livest (again) ’ (s 1975 a, b).

- (ii) *Declines in the West and arises in the East.*

‘ K. departs in life in the West, whilst the inhabitants of the *D3·t* (the region of the dawn ?) accompany him ; K. shines forth anew in the East ’ (s 306 a, b).

This passage is of special significance in view of the marked tendency for royal tombs to be on the west bank of the Nile, and the almost invariable position of the sarcophagus at the west end of the tomb chamber.

- (iii) *Becomes an Imperishable Star.*

‘ Thou who art very lofty among the Imperishable Stars, thou shalt (like them) not perish for all eternity ’ (s 878 a, b).

‘ O K. ! Horus comes to thee, equipped with his (“souls”) Hapy, Duamutef, Imesty, and Kebhsenuf ; they bring thee this thy name of “Imperishable (Star)” ; thou shalt not perish ; thou shalt not pass away ’ (s 2101 a, b, 2102 a, b).

This and many other references to the four children of Horus are of interest in view of their association with the four canopic jars which contained the entrails of the deceased, and were placed in the canopic box near the sarcophagus.

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- (iv) *His Senses are Restored.* After mummification (a subject dealt with in other works¹⁷ and outside the scope of this book), there occurred the ceremony of the opening of the mouth, eyes, ears and nose of the deceased (the restoration of the senses), generally known simply as the 'Opening of the Mouth.' The rite comprised the following phases :

Solar purification ;
Rites for the return of the soul ;
 Seeking the soul ;
 preparing a habitat for the soul ;
 giving it rest ;
Solar rite of opening the mouth ;
Rites of solar adornment, etc.
' K's mouth is opened for him ;
K's nose is opened for him ;
K's ears are opened for him ' (s 712 a, b).
' Horus has opened for thee thine eye, that thou mayest see therewith
(again) ' (s 610 a).

- (v) *His Members are Reassembled.* These important references recall the legend of Osiris, whose body became dismembered and whose bones were later collected together and reassembled. It is indeed possible that dismemberment and the subsequent reassembling of the bones was an archaic form of burial practised in predynastic and early dynastic times.

' Nephthys has assembled for thee all thy members in this her name
Seshat, mistress of builders ' (s 616 a).
' Horus has joined together thy members for thee ; he has united
thee (set thee together again), without there being any derangement
in thee ' (s 635 a, b).
' She (Nut) gives thee thy head (anew) ; she joins together thy bones
for thee ; she joins together thy members for thee, that she may
bring thy heart into thy body for thee ' (s 835 a, b, c).

- (vi) *His Body does not Decay.*

' O flesh of this K, do not decay, do not rot ' (s 722 a, b).
' Thy bones shall not pass away ; thy flesh shall not become bad ;
thy members shall not be removed from thee ' (s 725 a, b).

- (g) *Protection from Evil.*

- (i) *Equipped with Charms and Magic.*

' K. is a magician ; K. is possessed of magic powers ' (s 924 b).
' This magic power that is in the belly of K. is on him when he
ascends and lifts himself to the sky ' (s 1318 c, d).
' Do not ask of K. his magic power ' (s 2029 d).

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(ii) *Protected against Serpents.*

- 'Serpent, turn over (on thy back) so that the sun-god may see (thy belly?)' (s 226 b).
'Rē appears, with his Uraeus serpent upon his head, against this serpent, who is come forth out of the earth, who is under the fingers of K. He cuts thy (the serpent's) head off, with this knife which was in the hand of Mafdet' (s 442 a, b, c).

(iii) *Protected by Horus and the Children of Horus.*

- 'Offspring of Horus! Hapy, Duamutef, Imesty, and Kebhsenuf, give living protection to your father K.' (s 1333 a, b, c).
'Horus does not allow thee to be ill;
Horus lays for thee thine enemy under thy feet, and thou livest (again).
Horus has given to thee his children, so that they may betake themselves under thee . . . and that they may bear thee' (s 637 a, b, c).
'Thine enemy has been beaten by the children of Horus, and they have made his beating red (bloody)' (s 643 b).

(iv) *Relieved from Thirst and Hunger.*

- 'Hunger, come not to K. . . .
K. is sated. K. hungers not, because of yonder wheaten bread of Horus, that he has eaten' (s 551 a, c, d).
'K. thirsts not through Shu; K. hungers not through Tefnut. Hapy, Duamutef, Kebhsenuf, Imesty, they will drive away this hunger which is in the body of K.; this thirst which is on the lips of K.' (s 552 a-d).

(h) *The Journey to the Sky.*

(i) *By the Barques of the Sun-God Rē.* These references are of special significance in view of the presence of rock-hewn barques near several of the Old Kingdom pyramids.

- 'The two reed-floats of the sky have been placed for Rē so that he may journey to the horizon on them; . . .
The two reed-floats of the sky have been placed for K., so that he may journey in them to the horizon to Rē' (s 337 a, c).
'O pure one! Assume thy throne in the barque of Rē, and sail thou upon the way' (s 1171 a, b).
'This K. is conveyed over to the eastern side of the horizon' (s 341 a).
'Thou passeth the night in the evening barque; and thou awakenest in the morning barque' (s 1479).

Instructions were duly given to the ferryman 'he who looks behind himself' to transport the deceased to the future life:

- 'O thou whose face is turned behind thee, ferry K. across' (s 999 a).

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(ii) *By Ladder.*

'A stairway is laid for him to the sky, that he may ascend to the sky thereby' (s 365 a).

'K. ascends upon this ladder, which his father Rē made for him' (s 390 a).

'Each god who will construct a stairway for K. (when) he departs and ascends to the sky, each god who will prepare (?) his place in his barque (when) he departs and ascends to the sky' (he shall be promised all offerings), (s 1325 a-d).

The stepped form of pyramid may have been to symbolise this stairway to the sky.

(iii) *On the Wing of Thoth.*

'If thou dost not ferry over this K. then he will leap up and set himself upon the wing of Thoth; he (Thoth) it is who will then ferry him over to the far side' (s 387 a-c).

(iv) *On the smoke of Incense.*

'He ascends upon the smoke of the great fumigation' (s 365 b).

Whichever way the deceased went on his journey to the sky, whomsoever he might find in his path he would eat up (s 278). Precautions were taken that he should not be hindered at the entrance to heaven (s 309 c), and that the gates of heaven should be open to receive him (s 727 a). It was Geb who was to hold the king by the hand and guide him through the gates of heaven (s 1115 a, b).

(i) *Entry into the Future State.*

(i) *Acclaimed by the Gods.*

'O Seth and Nephthys, hasten and proclaim to the gods of Upper Egypt and their spirits:

"Verily this K. comes, an imperishable spirit: when he wishes that he die, then ye die; when he wishes that ye live, then ye live" (s 153 a, b, c).

"How happy are those who have seen, how satisfied are those who have beheld," thus say they, thus say the gods, "the ascent of this god to the sky, the ascent of K. to the sky" (s 476 a, b).

'This K. found the gods standing, wrapped in their garments, their white sandals on their feet. They cast off their white sandals to the earth, and they throw off their garments. "Our heart was not glad until thy coming down!" so say they' (s 1197 a-e, 1198 a).

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(ii) *Devours the Gods in order to Acquire their Virtues.*

'The sky pours water, the stars darken, . . .
When they see K. appearing, shining and mighty,
As a god who lives on his fathers and feeds on his mothers . . .
K. is the bull of the sky, who conquers according to his desire,
Who lives on the being of every god,
Who eats their entrails, who comes when their belly is filled with
magic, from the island of fire . . .
Their great ones are for his morning portion,
Their middle-sized ones are for his afternoon portion,
Their little ones are for his night portion.
Their old men and old women are for his incense-burning . . .
He has swallowed the intelligence of every god' (s 394-411, greatly
shortened).

(iii) *Becomes a God and Administers Justice.*

'O Osiris K.! Thou art a powerful god ; there is no god that is
thine equal' (s 619 a).
'Thou takest thy seat upon this thy wondrous throne ; Thou judgest
with the two Enneads' (s 1934 b, c).
'Standing before the two shrines of Upper and Lower Egypt, thou
judgest the gods' (s 2005 a).

IV. CONCLUDING SUMMARY.

Some of the more important aspects of the Pyramid Texts have now been outlined and it is evident that they provide a revealing glimpse into the minds of those who built the pyramids of the Old Kingdom.

In a few words it may be said that they provided the deceased with a detailed list of every offering which he could conceivably require, and by their magic words secured the offerings themselves. They assured for him his moral fitness for the future life ; they cast the right spells for his purification and embalming, banished death from his body and soul ; transformed him into an everlasting spirit ; restored his senses after mummification, and reassembled his bones without any loss. Their magic words equipped him with charms and protections against serpents and other creeping things ; and they protected him against illness, thirst, hunger, and other enemies. For his last journey to the sky they provided him with the morning and evening barques of Rē, as well as with the services of the ferrymen ; in case of any default he was also supplied with a stairway to the sky, and if all this failed he could reach the heavens on the wing of Thoth, or the smoke of the great incense-burning. On his entry through the gates of the sky the texts assured him of a triumphant entry and of a resounding welcome from the gods. After devouring the gods in order to acquire their virtues, he himself became a god much greater than they ; and seating himself on his throne, became the judge of gods and men.

The wealth of these texts cannot however be understood from a mere selection of extracts. Only by prolonged study of the complete version can the reader hope to reap profitably from the harvest which they contain.

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REFERENCES

1. DE MORGAN, J. *Fouilles à Dahchour*, II, 1894-5, 77-85.
2. I am indebted to the late Mr A. Lucas, O.B.E., F.I.C., for analysing a specimen from the pyramid of Unis.
3. MASPERO, G. *Les Inscriptions des Pyramides de Sakkara*, 1894.
4. SETHE, K. *Die Altägyptischen Pyramidentexte*, 1908-1922.
5. SETHE, K. *Übersetzung und Kommentar zu den Altägyptischen Pyramidentexte*, 1935 to date.
6. SPELEERS, L. *Les Textes des Pyramides Égyptiennes*, 1923-4. *Comment faut-il lire les Textes des Pyramides Égyptiennes ?* 1934.
7. SPELEERS, L. 'La Resurrection et la Toilette du Mort selon les Textes des Pyramides' in *Revue d'Égyptologie*, III, 1938.
8. BREASTED, J. H. *Development of Religion and Thought in Ancient Egypt*, 1912.
9. JÉQUIER, G. *La Pyramide d'Oudjebten*, 1928, p. 6.
10. HAYES, W. C. 'Pyramid Texts in Tomb of Senusret-'Ankh,' in *Bulletin of Metropolitan Museum of Art*, New York, Nov. 1933, II, p. 30.
11. BREASTED, J. H. *Development of Religion and Thought*, 1912, p. 98.
12. MASPERO, G. *Les Inscriptions des Pyramides de Sakkara*, 1894, pp. 354-5.
13. SETHE, K. *Die Totenliteratur der Alten Ägypter*, 1931, p. 3.
14. LACAU, P. 'Suppressions et Modifications des Signes dans les textes funéraires,' in *Zeitschrift für Ägyptische Sprache*, LI, 1914, 1-64.
15. HAYES, W. C. In *Bulletin of Met. Museum of Art*, New York, Nov. 1933, II.
16. MORET, A. 'Le Jugement du Roi Mort dans les Textes des Pyramides,' in *Annuaire de l'École des Hautes Études* (sec. Sciences Religieuses), 1922-3.
17. SMITH, G. E. AND DAWSON, W. R. *Egyptian Mummies*, 1924; Dawson, W. R., 'Bibliography of Mummification' (*Mem. de l'Inst. d'Égypte* XIII, 1929); Engelbach and Derry, 'Mummification' in *Annales du Ser. Ant.*, XLI, 233-270.

EGYPTIAN PYRAMIDS

LITERATURE

TEXTS AND TRANSLATIONS

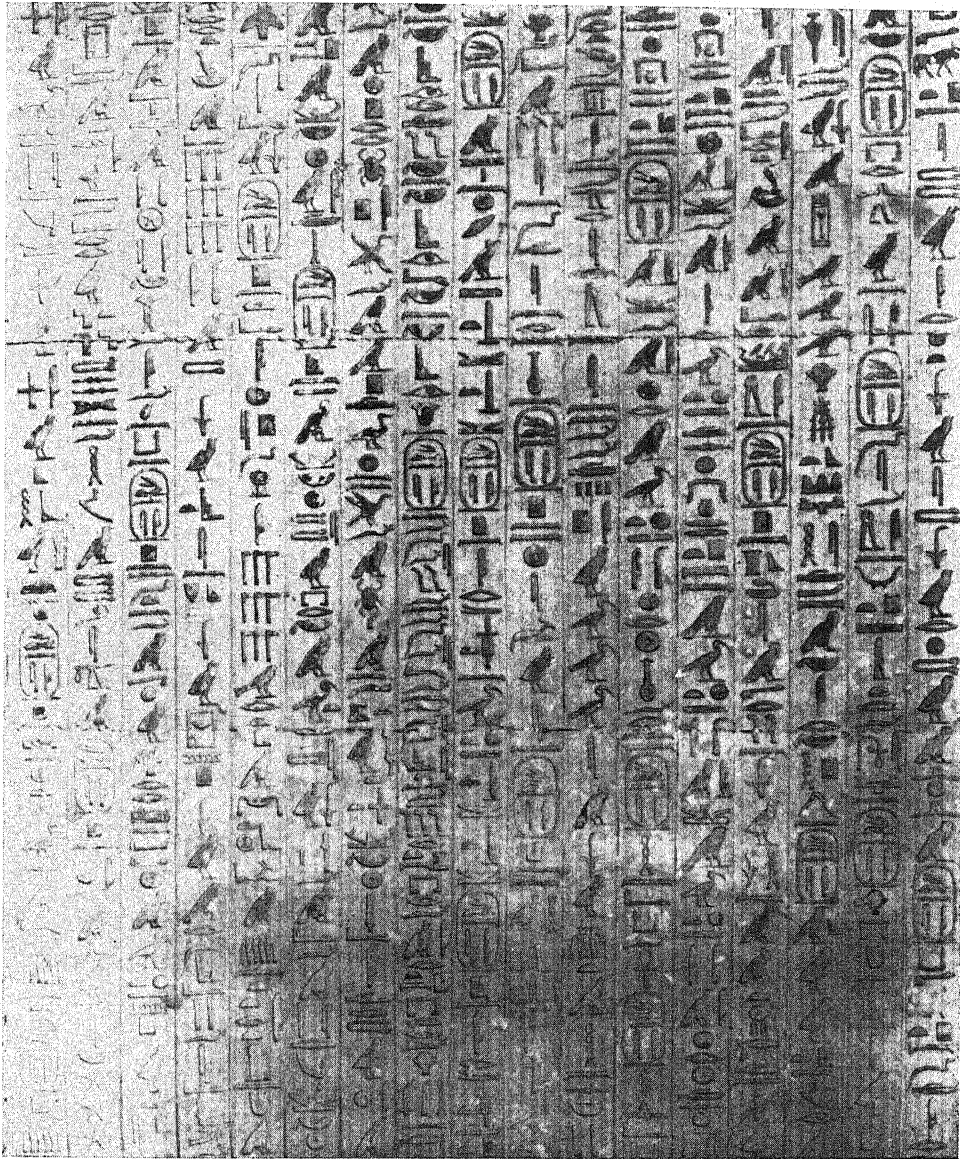
- MASPERO, G. *Les Inscriptions des Pyramides de Sakkara*, 1894.
SETHE, K. *Die Altägyptischen Pyramidentexte*, 1908-1922.
SETHE, K. *Übersetzung und Kommentar zu den Altägyptischen Pyramidentexte*, 1935 to date.
SPELEERS, L. *Les Textes des Pyramides Égyptiennes*, 1923-4.
SPELEERS, L. *Comment faut-il Lire les Textes des Pyramides Égyptiennes ?* 1934.

TEXTS RECENTLY DISCOVERED

- JÉQUIER, G. *La Pyramide d'Oudjebten*, 1928.
JÉQUIER, G. *Les Pyramides des Reines Neit et Apouit*, 1933.
JÉQUIER, G. *La Pyramide d'Aba*, 1935.
JÉQUIER, G. *Le Monument Funéraire de Pepi II*, 1936.
HAYES, WM. C. 'The Texts of Senusret-'ankh' in *Bulletin Met. Mus. Art, New York*, 1933.

STUDIES

- BREASTED, J. H. *Development of Religion and Thought in Ancient Egypt*, 1912.
REISNER, G. A. *The Egyptian Conception of Immortality*, 1912.
ALLEN, T. G. *Horus in the Pyramid Texts*, 1916.
MORET, A. 'Le Jugement du Roi Mort dans les Textes des Pyramides,' in *Annuaire de l'École des Hautes Études*. (Section des Sciences Religieuses), 1922-23.
KEES, H. *Totenglauben und Jenseitsvorstellungen der Alten Ägypter*, 1926.
MORET, A. *La Mise à Mort du Dieu en Égypte*, 1927.
BALY, T. J. C. 'The Opening of the Mouth,' in *J.E.A.* xvi, 1930.
SETHE, K. *Die Totenliteratur der Alten Ägypter*, 1931.
SPELEERS, K. 'La Resurrection et la Toilette du Mort selon les Textes des Pyramides,' in *Rev. d'Égyptologie* III, 1938.
GRAPOW, H. 'La Publication des Textes des Pyramides,' in *Chronique d'Égypte*, July, 1939.
THAUSING, G. *Der Auferstehungsgedanke in Ägyptischen Religiösen Texten*. Leipzig, 1943.

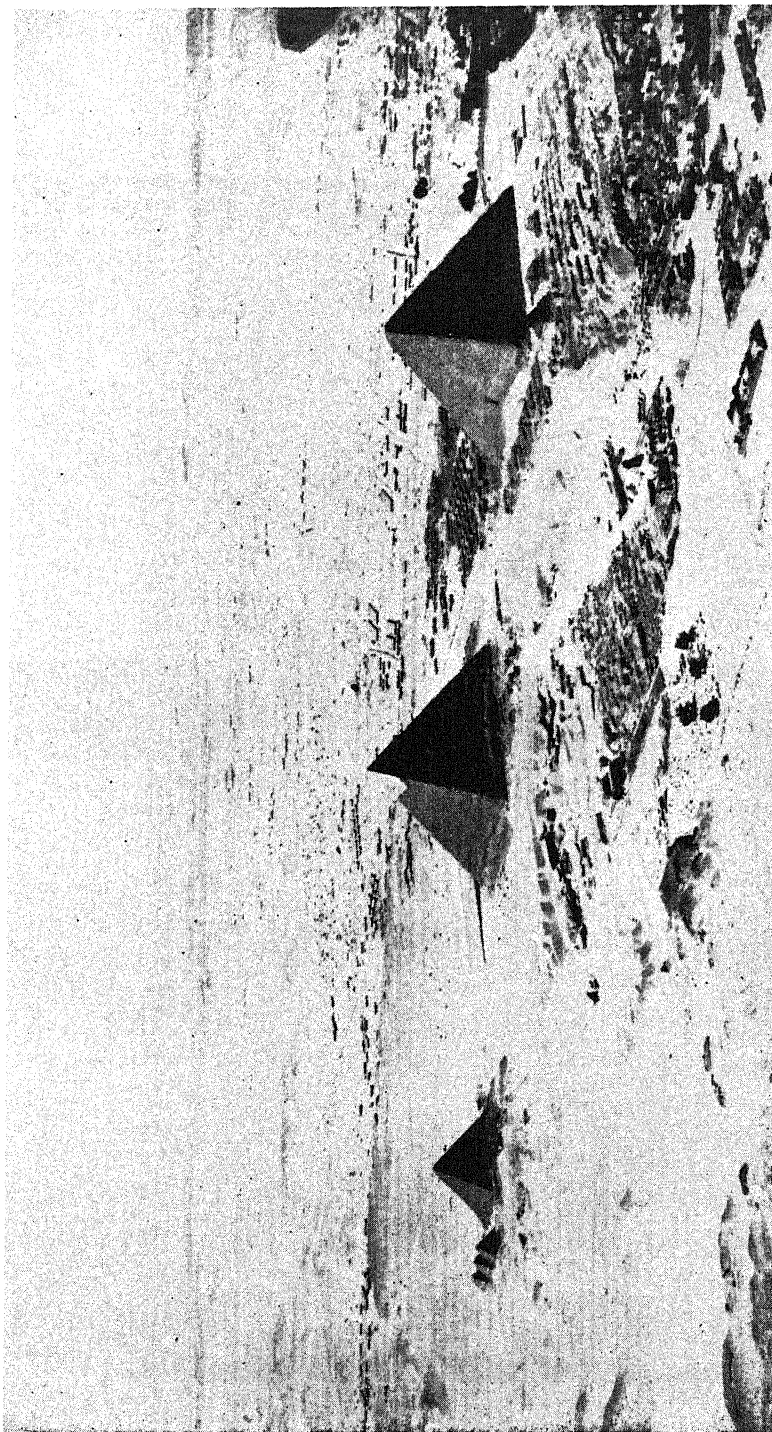


PYRAMID TEXTS IN PYRAMID OF UNIS

Photo : A. F. Kersting

facing p. 96

PLATE VII



PYRAMIDS OF GIZA: Oblique Air-photograph

R.A.F. Official

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facing p. 97

PART II

TOPOGRAPHICAL

‘Having discovered the Founders of these Pyramids, and the time in which they were erected, and lastly, the End for which these Monuments were built : Next, in the Method we proposed, the *Sciography* of them is to be set down. Where, we shall begin with the Dimensions of their Figure without, and then we shall examine their several Spaces and Partitions within.’

J. GREAVES, *Pyramidographia*, 1646, p. 67.

CHAPTER I

Abu Rauwâsh

APART from a small destroyed brick pyramid at Athribis near Benha,¹ the most northerly pyramid area in Egypt is at Abu Rauwâsh, about 8 kilometres north of the Gîza pyramids.

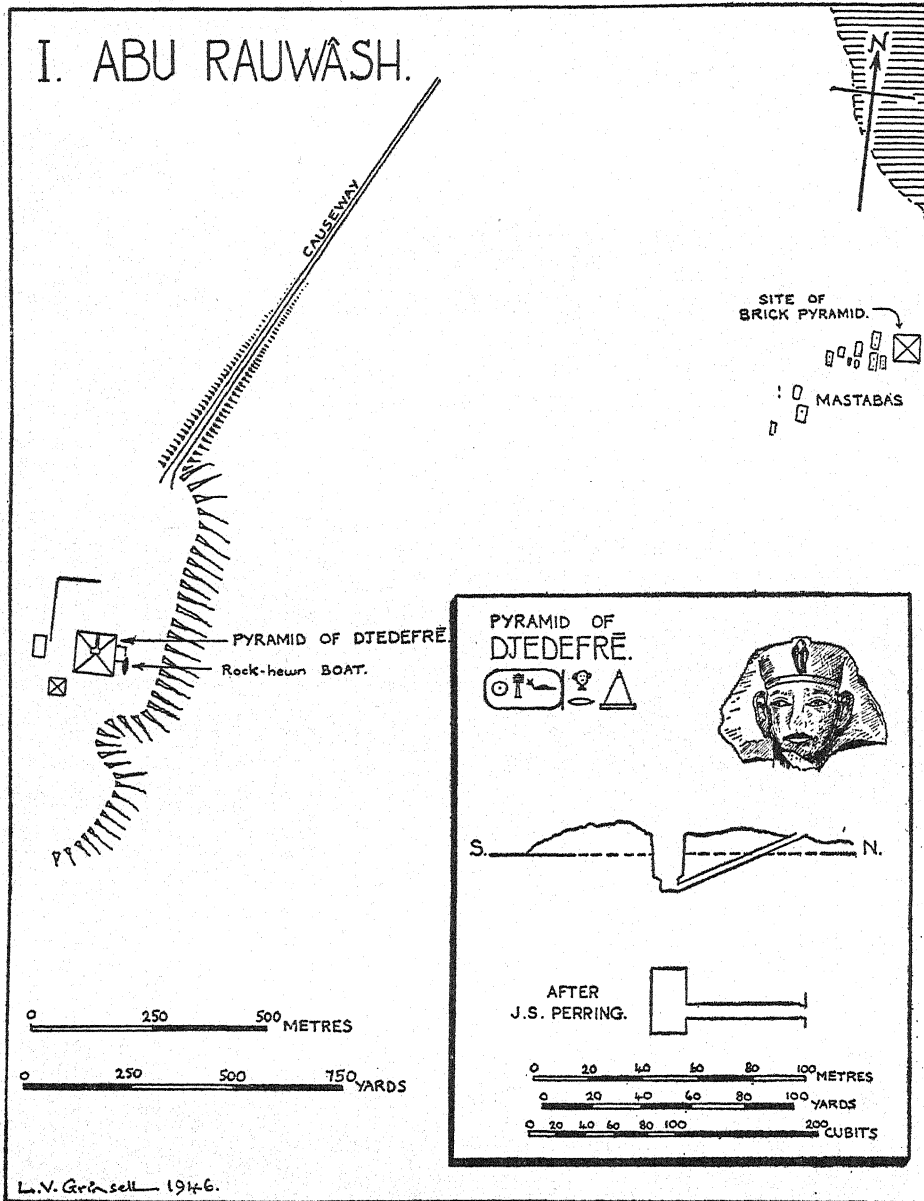
THE PYRAMID, ‘HIGH ONE OF DJEDEFRĒ’ AND SURROUNDINGS.

From the vicinity of a few scattered blocks of limestone west of Abu Rauwâsh village, which doubtless form the visible remnant of the lower temple, there extends w.s.w. a magnificent causeway for about $1\frac{1}{2}$ kilometres to the pyramid. It is the finest of all pyramid causeways, and as it gradually ascends the plateau of the pyramid it reaches a height of some 12 metres above its surroundings.

To the east of the pyramid are the scanty remains of the upper temple, explored by M. Chassinat about 1901, but the results are still unpublished except for an account of statues found in that vicinity.²

The pyramid is about 100 metres square, and at present some 12 metres high, nearly all of the superstructure being absent. According to the Turin Papyrus Djedefrē reigned for only 8 years, and if that is true his pyramid was probably left unfinished. The presence on the east face of 5 or 6 blocks (apparently backing-stones) of red granite *in situ* shows that the construction of the pyramid must have reached a fairly advanced stage, and that it was intended to be cased in red granite at anyrate for the first three courses. A great quantity of stone has been removed from this pyramid for building material, and in 1881 Petrie was told³ that 300 camel-loads a day were then being removed. The structure now consists only of about 8 or 10 courses of limestone facing a massif of undisturbed rock. The whole area surrounding the pyramid is covered with chippings of red granite, especially near the entrance.

EGYPTIAN PYRAMIDS



ABU RAUWĀSH

From the centre of the north side, there extends a ramp about 48 metres long and 8-9 metres wide at $22^{\circ} 35'$, at the end of which is the sarcophagus chamber, some 9 metres wide, 21 metres long, and 9 metres deep, in the approximate centre of the pyramid. Perring⁴ suggested that a series of relieving chambers was constructed over the sarcophagus chamber, similar to those above the King's Chamber in the pyramid of Kheops. The sarcophagus chamber and ramp were originally lined with limestone or granite to a thickness of about 2 metres, making the dimensions of the sarcophagus chamber 5 metres wide by 17 metres long. These lining slabs are said to have been removed in the time of Mohammed Aly.⁵ The sight of the interior of this pyramid is very impressive (compare the north pyramid of Zāwyet el 'Aryān, Part II, Chapter 3).

Remains of a temenos wall around this pyramid are visible at the north-west angle.

South of the upper temple, and immediately east of the pyramid, is a large boat-shaped hollow, 35 metres long, 3.75 metres wide at its widest part, and 9.30 metres deep at the centre. It has the wide and deep centre, and high and narrow prow and keel which are usual in such rock-hewn barques, and the tooling of the walls is characteristic of ancient Egyptian work. It seems to have been in this boat-hollow, and beneath a thick bed of rubbish, that there were found three beautiful statuettes of the head of King Djedefrē (two in the Louvre and one at Cairo). These statues were most likely thrown into the boat-hollow by the despoilers of the upper temple, during the period of chaos that followed the fall of the Old Kingdom.

A word must be added concerning the owner of this pyramid. Djedefrē seems to have been implicated in the murder of Kheops' eldest son Kawa'ab and to have succeeded Kheops on the throne. He may have built his tomb at Abu Rauwāsh in order to avoid being buried near the legitimate heir in whose murder he was an accomplice.⁶ On the other hand Drioton and Vandier⁷ consider that Djedefrē followed Mycerinus to the throne, and the similarity in the dimensions of their pyramids may tend to support that view. In either case the finding of three statuettes of Djedefrē on the east side of the pyramid leaves little doubt that he was the builder thereof. Little else is known of him.

A very short distance to the south-west there formerly stood the remains of a small limestone pyramid of which scarcely a trace is left. A mass of masonry to the west has the appearance of a large mastaba, and there is a smaller one to the north.

There was also a supposed third pyramid, built of mud-brick, in the plain north of the village of Abu Rauwāsh and just east of a group of mastaba tombs. This was 17 metres high when Lepsius saw it in 1842,⁸ but according to Baedeker⁹ the superstructure has been entirely removed and there remains only the rock core with the sarcophagus chamber. I have never succeeded in locating this monument.

The groups of mastaba tombs near the site of the supposed brick pyramid and on a desert spur further south, range from Dynasty I to Dynasty IV, and some of the earlier examples are walled in mud-brick with recessed panelling.

EGYPTIAN PYRAMIDS

REFERENCES

1. *Description de l'Égypte*, Vol. v (Plates), Plate 27, figs. 3 and 4.
Annales du S. A., xxxviii, 1938, p. 524.
2. *Fondation Eugène Piot. Monuments et Memoires*, xxv, 1921-2, 53-75.
3. PETRIE, W. M. F., *Pyramids and Temples of Gizeh*, 2nd Edn., 1885, p. 53.
4. PERRING, J. S. *Gizeh*, III, p. 3.
5. PETRIE, W. M. F. *Pyramids and Temples of Gizeh*, 2nd Edn., 1885, p. 53.
6. REISNER, G. A. *The History of the Giza Necropolis* I, iv.
7. DRIOTON AND VANDIER. *Les Peuples de l'Orient Méditerranéen*, II *L'Égypte*, 1938, pp. 172, 201.
8. LEPSIUS, R. *Denkmäler*, I, Blätter 11, 12, 13.
9. BAEDEKER. *Egypt*, 1929 Edn. pp. 149, 150.

LITERATURE

Only works not quoted in the references are here given.

PYRAMID

- CHASSINAT, E. In *Academie des Inscriptions, Comptes Rendus*, 1901, 617-619.
VYSE, H. *Gizeh*, III, p. 8.

PRIVATE TOMBS

- BISSON DE LA ROQUE, F. *Abou Roasch*, 1924 and 1925.
MONTET, P. in *Kémi*, VII, 1938, pp. 11-114.

CHAPTER 2

Gîza

BEFORE describing the Gîza pyramids in detail, it is well to make one or two preliminary observations.

First, as to the siting of the pyramids. Kheops, the first to build a pyramid at Gîza, chose the best site, on the edge of the escarpment overlooking the Nile Valley. After him Khephren chose the next best position, slightly more elevated than that of Kheops but further away from the escarpment. Lastly Mycerinus had to be content with a position that was of less altitude as well as further from the escarpment.

Secondly, the structure of all three of the main Gîza pyramids suggests one or more changes in design after the building had begun. In all three the changes involved the construction of a new and larger sarcophagus chamber as well as an enlargement of the pyramid.

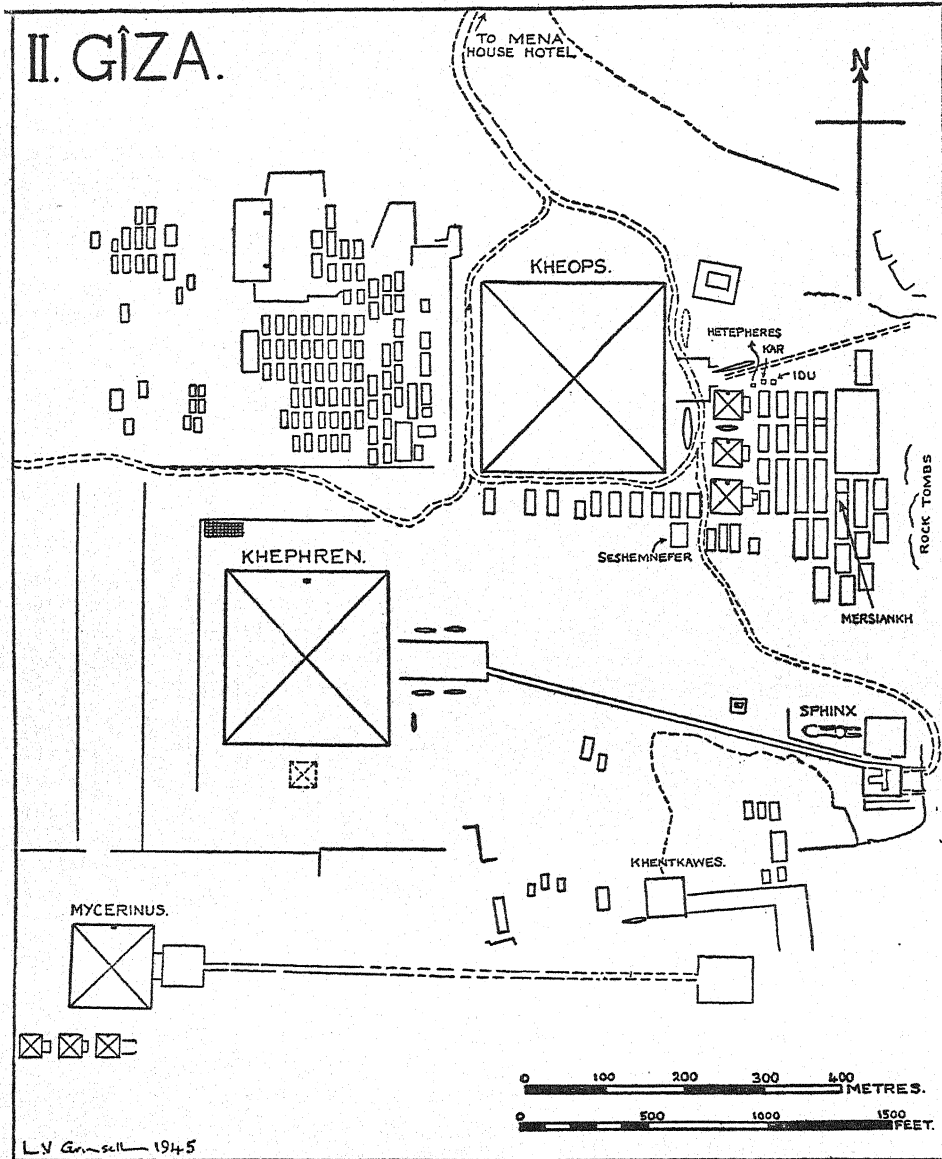
I. THE PYRAMID 'HORIZON OF KHEOPS,' AND SURROUNDINGS.

Remains of the lower temple of this pyramid are believed to be buried beneath debris near or in the village of Nazlet-es-Sammân but nothing appears to be visible. Signs of the causeway, in the form of massive blocks of coarse fossiliferous limestone, extend from Nazlet-es-Sammân in a west-south-west direction towards the boat-hollow placed obliquely in relation to the east face of the pyramid. It was there that Lepsius¹ marked the probable line of the causeway. Of the upper temple little survives except the greater part of the black basalt floor, east of the pyramid. The square sockets for the pillars of the central courtyard (long axis north-south) are visible, and also the remains of a drainage channel, perhaps used in the funerary ceremonies. A limestone slab bearing a relief of a Sed festival scene and part of the cartouche of Kheops suggests that this temple originally contained limestone wall reliefs.

The pyramid is surrounded by and partly built upon a prepared limestone platform which is visible in several places. The length of each side was originally 230 metres (440 cubits) and the original height was 146 metres (280 cubits), the present height being 137 metres. The angle of slope is about 51° 50'.

Of the original casing, which was of fine white limestone, the only portions now remaining are in front of the entrance at the base of the north side, and along part of the base of the south side. The casing blocks at the north side 'show finer joints than any other masonry in Egypt, and perhaps in the world; they are nearly as finely jointed to the backing-blocks behind them, and they are

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of great size, some being nearly 15 tons in weight.² On one of the casing blocks near the centre of the south side is a hieroglyphic inscription by a visitor named Psammētichus of Dynasty xxvi.³

Nearly all the masonry now visible on the exterior of the pyramid consists of backing stones. On some of the backing stones of the first 5 or 6 courses, on the south, east, and west sides, there are builders' inscriptions and marks written mostly in red but occasionally in black. Two of them contain the name Khnmw-khuf, and two others the name Medjedu, both of which are names belonging to Kheops. Other markings denote the names of gangs of workmen, and certain vertical and horizontal lines with triangles extending from them are architects' measurement lines.⁴ All these inscriptions are contemporary with the building of the pyramid. These backing stones also contain some thousands of inscriptions of visitors of many nationalities and periods. The earliest dated inscription is of A. Baso, 1441, and gives an approximate date for the removal of the casing blocks. Among the distinguished visitors' signatures on the backing stones are those of Mercator the cartographer (dated 1563) and Ferdinand de Lesseps, builder of the Suez Canal.⁵

The thickness of the courses of backing stones varies considerably; of the total of about 210 courses, every tenth or eleventh course consists of blocks that are much larger than the others,⁶ so that there are about 19 extra thick courses placed at regular intervals.

Now the narrow part of the ascending ramp passes clean through the middle of a large block of stone every 10 cubits (5 metres). Therefore it seems clear that the pyramid consists of a core about 50 cubits thick, nineteen inner facings or accretions on all four sides 10 cubits apart (=380 cubits), and an allowance of 10 cubits for the addition of backing stones and casing blocks makes the total of 440 cubits which is the known original length of the sides of the pyramid.

The original entrance is not at present accessible, but its position is marked by the slabs of its pointed roof on the north side, above the present entrance. On one of the slabs of this triangular stonework is a rectangular inscription in hieroglyphs, set up by Lepsius to commemorate his visit to the pyramids with some German colleagues on the occasion of the birthday of the King of Prussia in 1843.

Much has been written about the arrangement of the internal passages and chambers. It is sufficient to note the following features :

- (i) The modern entrance, which cuts straight into the body of the pyramid from the north for a distance of some 36 metres, is a robbers' entrance known as 'Mamoon's forced passage.' This joins :
- (ii) The original ramp (accessible on request) extending from about 15 metres above the base on the north side at about 28° downwards to an unfinished chamber and passage ending in a cul-de-sac. There are holes arranged at intervals along the east wall of this ramp, and there are also two slabs of granite which may or may not be the remains of a blocking stone and its fittings.

EGYPTIAN PYRAMIDS

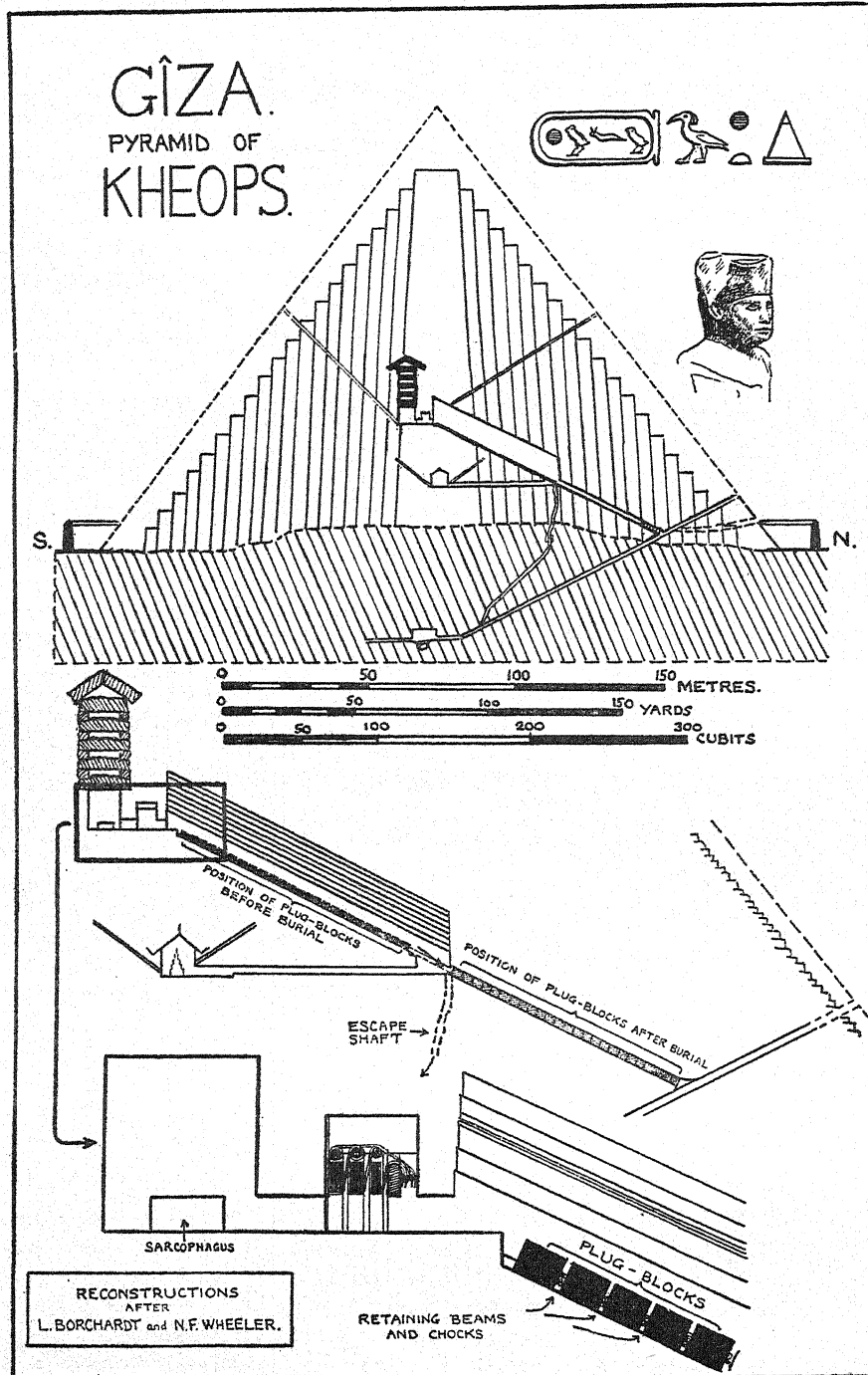


FIG. 9

- (iii) The ascending ramp appears to have resulted from the first change in the builders' plans. Some reason, perhaps the necessity to deceive tomb robbers, led to a decision to build a ramp leading upwards to a sarcophagus chamber in the body of the pyramid. At intervals of 10 cubits this ramp cuts through a large block of one of the inner facings as previously noted.
- (iv) The horizontal passage extends from the top of the ascending ramp southwards to the mis-called Queen's Chamber, which may have been intended to be the King's sarcophagus chamber according to the first change in the builders' plans; but it may have been intended as a serdab chamber (see p. 28).
- (v) The Queen's Chamber (so-called) has a pointed roof and there are narrow shafts, the so-called ventilation shafts, extending upwards and outwards from the walls. At the east end is a fine corbelled recess, perhaps a serdab. The Queen's Chamber is unfinished.
- (vi) The ascending gallery is a continuation of the ascending ramp but has a very high and magnificent corbelled roof, about 8.50 metres high. The purpose of the holes, placed at regular intervals on each side near the floor level, was probably to receive chocks, retaining beams, or scaffolding to assist in lowering the granite plug-blocks which were to block the ascending ramp after the deceased had been interred.
- (vii) A short horizontal passage extends from the top of the ascending gallery to the sarcophagus chamber. It contains the slots for the three portcullis slabs of granite, and at the end nearest the sarcophagus chamber is a curious arrangement of four vertical channels cut in the granite. The mechanism of this portcullis passage offers many problems and has been discussed by Borchardt and others.⁷
- (viii) The so-called King's Chamber is lined and roofed with very large slabs of red granite, and has a flat ceiling. From the walls there extend two so-called ventilation shafts to the outside of the pyramid. Near the west end is the granite sarcophagus, which is uninscribed and undecorated. Along the west edge of the sarcophagus are three small holes to receive knobs or bolts from the lid; along the east inner edge of the sarcophagus is an undercut bevel to receive the edge of the lid; these two devices repeatedly occur in Old Kingdom royal sarcophagi, and should have made it impossible to break them open, but the skill of the robbers was always greater than that of the builders.
- (ix) Above the ceiling of the sarcophagus chamber are five granite relieving chambers, each about 1 metre high, the uppermost of which has a pointed limestone roof. Originally completely closed off, they are now accessible with difficulty if a ladder is set up. Some of the builders' marks and inscriptions in these chambers are dated 'Year 17,' showing that the building of the pyramid had reached that stage in the 17th year of the king's reign.⁸

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- (x) From the bottom of the ascending gallery a shaft leads to a point near the lower end of the original ramp. It was evidently an 'escape shaft' and formed an exit for those responsible for lowering the plug-blocks into the ascending ramp after the king had been interred in his sarcophagus chamber.
- (xi) The existence of the ascending ramp was concealed from would-be tomb-robbers by the presence of a limestone slab at its lower end.

It remains to notice certain features of interest surrounding the pyramid of Kheops.

The large rock-hewn sacred barque east of the pyramid and south of the temple is surrounded by a modern stone wall. In a corresponding position north of the temple is another rock-hewn barque which was filled up in 1939 or 1940. Other barques in this vicinity are described in Part 1, Chapter 2.

Snefru's wife Hetepheres, who was the mother of Kheops, was buried south of the Blunted Pyramid at Dahshûr, but her alabaster sarcophagus and canopic box, and her bed, carrying chair, and other objects of wood (cedar and ebony ?) with magnificent gold mountings and hieroglyphs, were found by Mr Alan Rowe and the late Dr Reisner in 1925, in a shaft immediately east of the northernmost of the three small pyramids east of the Great pyramid. They are now in the Egyptian Museum at Cairo.

The three small pyramids are considered to have been for three of Kheops' wives.

The northern example, apparently throughout of limestone, is about 45 metres square and at present some 6 metres high. The slope angle of the casing is about 51° as shown by a block on the east side. The entrance, in the centre of the north side, is covered with a massive roof slab and leads to a steep ramp (about $33^{\circ} 30'$) 16½ metres long, at the end of which is an antechamber with a short ramp from the west end sloping downwards into the sarcophagus chamber. Scanty remains of the temple are visible on the east side. This pyramid was originally begun 28 metres to the east, where the partly cut foundations are still to be seen. Reisner considered that the site was moved further west to avoid disturbing the shaft of Hetepheres I.

The central example is likewise of limestone, having a core of the local coarse material and the remains of a casing of fine white limestone, four or five courses of which are still visible on the east side. At least three inner facings can be clearly distinguished. Built on a platform of limestone slabs, the pyramid is about 45 metres square and at present 8 or 9 metres high, the slope angle being about 52° . The entrance, on the north side, is about 1 metre square, and leads to a ramp 11 metres long at the end of which is an antechamber with a short ramp descending westwards into the sarcophagus chamber. Remains of a temple to the east of the pyramid include a slight recess for the false door.

The southern pyramid has likewise a core of coarse limestone and a casing of fine white limestone, seven courses of which are visible on the north side, and three or four on the east and south sides. Three or more inner facings are clearly visible. The present dimensions of the pyramid are about 45 metres

square and 11 metres high, with a slope angle of about 51° . The entrance, which seems to have had a small porch outside of the pyramid, is in the centre of the north side, and leads to the usual ramp about 16 metres long ending at an antechamber west of which is a short ramp leading to the sarcophagus chamber. On the east face of the wall of the ramp is the inscription: 'RE-OPENED 1837,' evidently by Vyse and Perring. According to an inscribed stela of Dynasty XXII found in the temple of Isis (on the site of the original temple east of the pyramid), this was the tomb of Henutsen, daughter of Snefru and wife of Kheops.

A fourth of Kheops' queens, Nefertkau eldest daughter of Snefru, was buried in a mastaba south of the pyramid last described.

To the east, south, and west of the pyramid of Kheops are groups of mastaba tombs of his family, the chief personages of his reign, and of later times. The main streets of tombs to the east are those of the family of Kheops, but some excellent tombs of Dynasty VI are at the northern end. Among the tombs of special interest in the eastern cemetery are the following examples:

- (i) *Mersiankh*, a grand-daughter of Kheops. On the door-jambs of the entrance are two inscriptions. That on the south side states:

'Royal daughter Mersiankh. Year 1, month 1 of the summer season, day 21: her *ka* was at rest and she proceeded to the place of embalming.'

That on the north side states:

'Royal wife Mersiankh. Year following the first year, month 2 of the winter season, day 18: she went to her beautiful tomb.'

The inference from these dates is that she was in the place of embalming for 272 days.

Among the wall reliefs are scenes of butchery and offering processions, the making of statues, polishing of a sarcophagus, and the carrying of funerary furniture which is similar to that found in the tomb of her great grand-mother Hetepheres I (now in Cairo Museum). Perhaps the finest scene is that of Mersiankh with her mother Hetepheres II in a papyrus boat, plucking flowers with her children. This tomb also contains 20 rock-hewn statues.

- (ii) *Kar*, who was overseer of the pyramid towns of Kheops and Mycerinus, *wab* priest of the pyramid of Khephren, and gardener of the pyramid of Meryrē Pepy I, and he therefore died during Dynasty VI.

A flight of steps leads downwards to three rooms. The first has a well preserved list of offerings, a representation of a tent for washing the dead, and scenes of the transport of funerary furniture, all on the north wall. The west wall shows people bringing offerings to Kar and his wife nicknamed Gefy (which means 'little monkey'). The second room has along the south wall a row of five statues of Kar and one of his little son Idu, whose tomb is immediately to the east. The third room contains a false door and offering tablet and more reliefs on the walls.

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- (iii) *Idu*. Over the doorway is a very fine hieroglyphic inscription recording the titles of deceased and reciting the usual offering formulæ. The chief interest of the interior is the remarkable false door in the centre of which is a statue of the deceased with his hands outstretched to receive the funerary offerings. The tomb is of Dynasty vi.

Near the south-east corner of the pyramid of Kheops is the tomb of Seshemnefer (accessible) with an impressive columned entrance which has a statue and a tiny obelisk on each side. The walls of the inner rooms are covered with reliefs in rather poor condition. In front of the ramp leading to the sarcophagus chamber is a fine false door. The sarcophagus chamber still contains a limestone sarcophagus and remains of a skeleton, and vertical columns of a hieroglyphic inscription are painted on the upper part of one of the walls of this chamber. This tomb is of Dynasty v or vi, in spite of the current dragomans' tale that it is the tomb of Kheops' prime minister.

Of the row of large mastabas south of the pyramid of Kheops only about one is worth an interior inspection.

On the west side of the pyramid of Kheops is a very extensive cemetery, among which tombs 4940, 4970, 2200, and 2370 (Senedjemib) are of special interest.⁹

II. THE PYRAMID, 'GREAT IS KHEPHREN,' AND SURROUNDINGS

The visitor will do well to begin his tour of the pyramid complex of Khephren at the magnificent lower temple of granite, near the Sphinx. At the time the pyramid was built the lower temple may have been connected with the Nile by a canal, so that it would have been accessible by a watercourse all the year round. In any case the waters of the inundation would have reached the entrance to the temple. The lower temple of Khephren is the most complete yet found. In front of the north and south entrances were a pair of small sphinxes the slots for which are still visible. These entrances lead into a vestibule containing a pit in which were found some statues of Khephren, including the famous diorite example in the Cairo Museum. From the vestibule there extends westwards a magnificent T-shaped hall of red granite pillars. The walls of this hall were lined with 23 statues of Khephren, the pits in which they were set being still visible. The whole hall was roofed over, and the only light was that supplied by a series of narrow slits in the upper parts of the walls, each of which cast an eerie beam of light on to one of the statues. South of this hall are six storerooms in two rows of three, and from the north arm of the T-hall there extends a corridor which, after passing a small chamber on the south and a stairway to the roof on the north, continues into the causeway leading to the upper temple. The flooring is of alabaster. The limestone basin, granite drainage channel, and four sockets arranged in a square (for the tent of purification?) outside the eastern façade should be noticed.

As the visitor leaves the lower temple and enters the causeway to the pyramid, he should observe parts of the original wall of the causeway where it leaves the lower temple.

GIZA

To the north of the causeway is the Sphinx, almost certainly a representation of Khephren on a lion's body and of the same period as that monarch. Research by M. Baraize in 1923 showed that it was formed from a natural bluff of rock left by those who had quarried some of the rough limestone for the pyramid of Kheops, and it was originally coated with white plaster and painted.

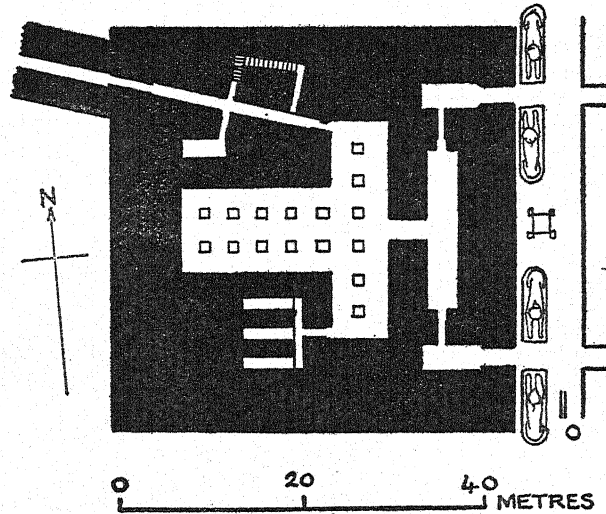


FIG. 10. LOWER TEMPLE OF KHEPHREN (after Hölscher)

The casings of small limestone blocks were restorations carried out during the reign of Thutmosis IV (as recorded in his dream-stela between the paws of the Sphinx) and during the Ptolemaic period. Nearby is a mud-brick temple containing a series of stelae extending from the reign of Amenophis II to the end of Dynasty XIX. Immediately east of the Sphinx and north of the granite lower temple is the Sphinx Temple, a rectangular structure enclosing a courtyard which was lined with 10 small sphinxes, the sockets of which are still to be seen.

Some 500 metres after leaving the lower temple, the causeway reaches the upper temple, a massive structure about 105 metres long and 45 metres wide. The entrance, near the south end of the east side, leads to a corridor with two small rooms on the south, a vestibule in the centre, and four storerooms at the north, where there is a ramp to the roof. West of the vestibule is a T-shaped hall with sockets for 24 pillars, the long arm being divided from the transverse arm by a doorway. From each end of the transverse arm is a corridor leading westwards to a serdab, the statue from which was long ago removed by thieves who broke in from the outer walls. At the west end of the T-shaped hall is the central court (long axis north-south) which was accessible by 16 entrances from a surrounding corridor. Between each pair of entrances there is believed to have been a statue of Khephren. In the centre of the court is a square foundation, probably of an offering table. West of this court are five statue-niches,

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from which a passage leads to five storerooms situated still further west. At the west end of the temple there is believed to have been an offering shrine containing a false door and an offering slab. The walls of the temple were largely lined with red granite but may have been partly covered with limestone reliefs; the floor was of alabaster.

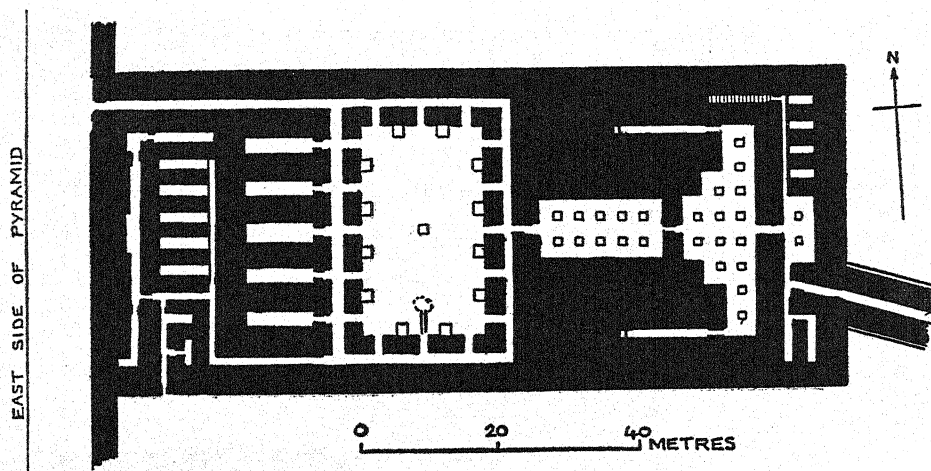


FIG. 11. UPPER TEMPLE OF KHEPHREN (*after Hölscher*)

The pyramid was originally 215.5 metres square and 143.5 metres high and the slope angle of the casing is $53^{\circ} 10'$ (Petrie).¹⁰

With the exception of the first two courses, which were of red granite (a few blocks are still in position), the casing was of fine white limestone, and is still in place on the top quarter of the pyramid. The body of the pyramid is of the local fossiliferous limestone.

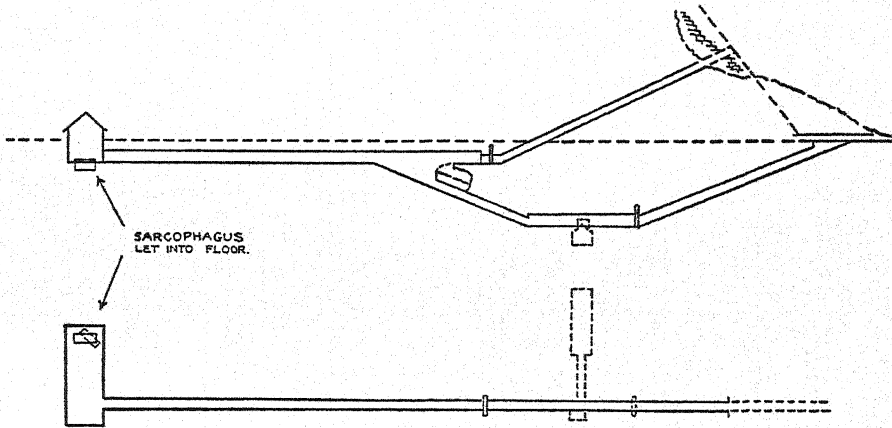
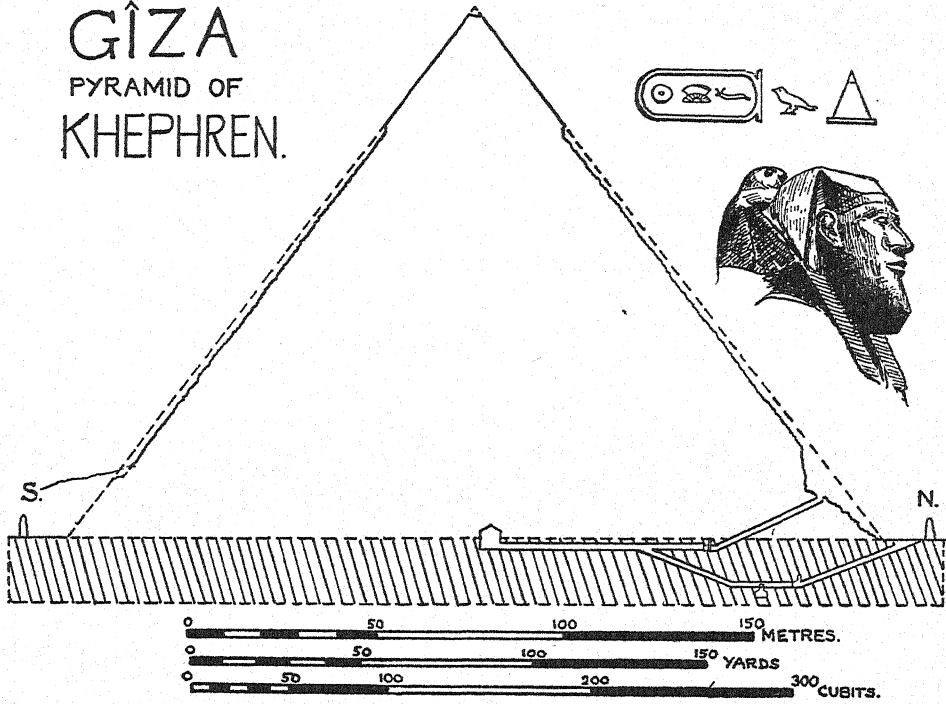
There are two entrances, both on the north side. One began on the ground level a few metres outside of the pyramid, but it is not now visible. It continued as a downward ramp at 22° , and then as a horizontal passage leading to the original rock-hewn sarcophagus chamber. This was abandoned in favour of the second entrance, ramp, passage, and sarcophagus chamber, which may have resulted from the planning of a much larger pyramid.

The second entrance is of granite, and is 11 metres above ground-level. The cover-slab contains Belzoni's inscription stating that he discovered and cleared the entrance and passage in 1818. The ramp, which is walled and roofed with slabs of granite, descends at about 26° as far as a short horizontal passage containing a vertical granite portcullis-slab. This horizontal passage is cut out of limestone rock. A short distance along its course it is met by the upward ramp from the lower passage, which can be explored from this position. There is a drop in this point of the horizontal passage of about 2 or 3 metres, and all but the most athletic will require assistance in negotiating it. The

GIZA

GÎZA

PYRAMID OF
KHEPHREN.



AFTER J.S. PERRING AND U HÖLSCHER.

FIG. 12

III

EGYPTIAN PYRAMIDS

passage continues horizontal as far as the approximate centre of the pyramid, where it ends in the sarcophagus chamber. The latter is walled with limestone and has a pointed roof of the same material.

Set into the floor of the western end of the sarcophagus chamber is the sarcophagus, of finely wrought granite, the external dimensions of which are 2.60 metres (5 cubits) long, 1.05 metres (2 cubits) wide, and about 1 metre (2 cubits) deep. The western long side has a slot on the top of each end, for the fitting of the lid. The latter is on the floor beside the sarcophagus. The slots into which the lid fitted contained some resinous sealing substance which was noted by Vyse.¹¹ On the south wall of the sarcophagus chamber is Belzoni's inscription recording his entry in 1818.

Immediately south of the pyramid there was originally a small limestone pyramid 20.10 metres (40 cubits) square, now almost entirely removed except for the entrance and ramp (too narrow for adults to descend). It is built on a pavement of limestone, remains of which are still distinguishable.

Around the north and west sides of the pyramid of Khephren the natural rock was quarried away, so that the lower portion of the north-west part of the pyramid consists of undisturbed rock. At the north-west corner of this quarry-hollow, on the ground, is a squared pattern of channels one cubit apart from one another, which were formed in the process of quarrying away the stone. On the rock faces north and west of this evidence of quarrying are hieroglyphic inscriptions of the period of Ramesses II.

North of the upper temple of Khephren are two rock-hewn barques, and south of the upper temple are three more.

Among the most important private tombs near the pyramid of Khephren is the rock-cut mastaba of Debehen, which is however generally verminous on account of visits by natives for the purpose of performing their zikr therein every Friday. In addition to a good series of wall reliefs it contains a well known hieroglyphic inscription relating how Mycerinus, passing on his way to inspect the work on his own pyramid, made arrangements for the completion of the tomb of Debehen.

The north, west, and south sides of the pyramid of Khephren are surrounded by temenos walls. West of the western temenos wall are a series of ruined parallel walls enclosing about 110 small narrow divisions, considered to be workmen's dwellings of Dynasty IV.

III. THE PYRAMID 'DIVINE IS MYCERINUS,' AND SURROUNDINGS.

The exploration should begin from the remains of the lower temple, which is situated immediately west of the Mohammedan cemetery and south-west of the granite lower temple of Khephren. The scanty visible remains need not detain the visitor long, but the excavations of the late Dr Reisner brought to light more information concerning this temple than is available for any other lower temple.

The entrance, in the centre of the east side, led to a vestibule with four columns, north and south of which were four rooms. To the west was a rectangular open court containing a drainage channel and basin. At the west

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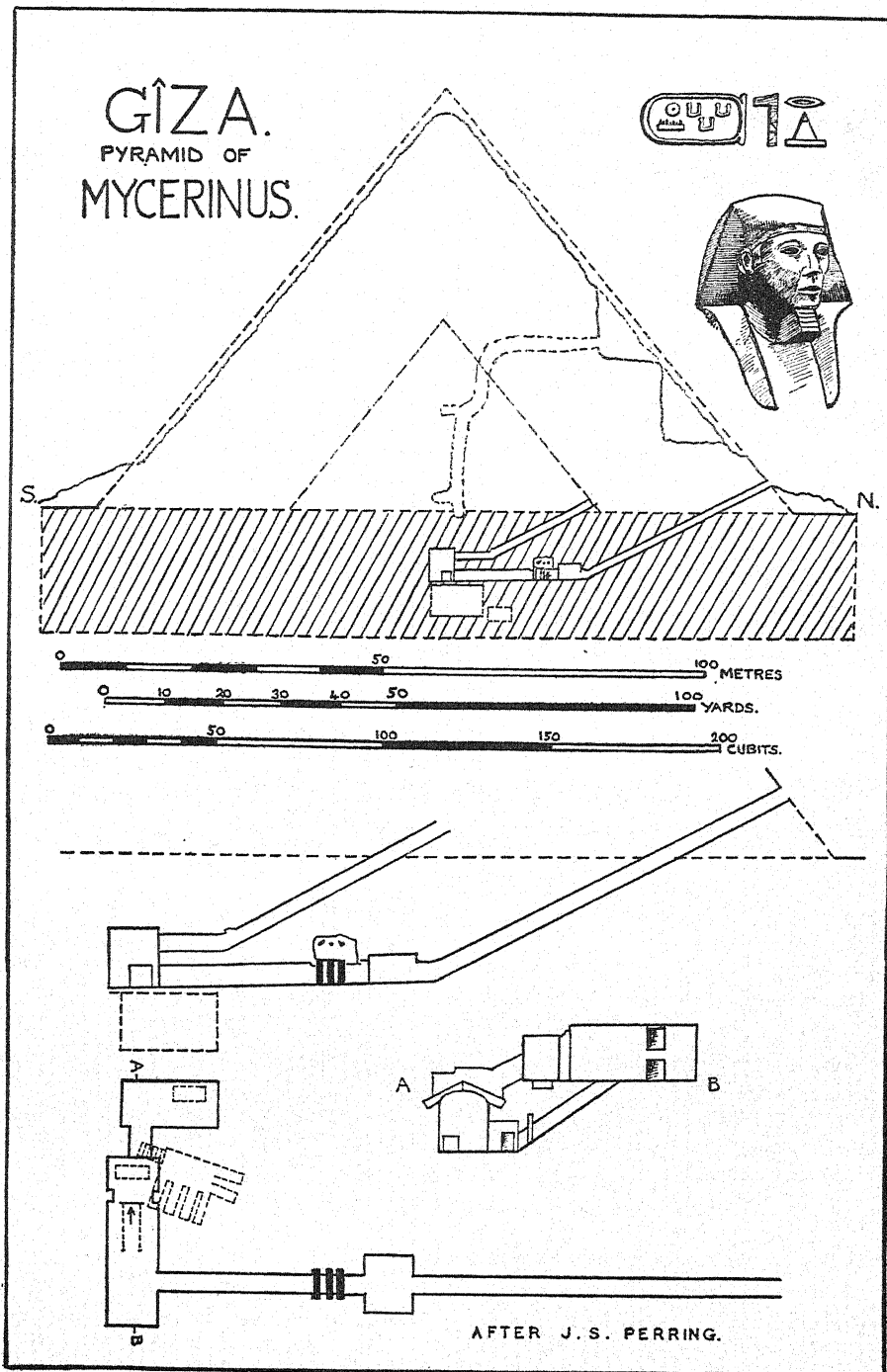


FIG. 13

EGYPTIAN PYRAMIDS

end of the court was a six columned portico behind which was a (shrine?). Storerooms on the north of this portico and supposed shrine contained offering vases, and rooms on the south contained royal statues and triad statuettes.

In view of the premature death of Mycerinus this temple was completed, in mud-brick, by his successor Shepseskaf, and there was a restoration in the same material during Dynasty VI.

From the lower temple to the upper temple there is a causeway which is in one or two parts banked up to a height of two or three metres. It was probably originally walled with mud-brick and roofed with palm logs.

The upper temple is a rectangular structure in fairly good condition. An entrance corridor of mud brick leads to the usual central court (long axis north-south) paved with limestone and walled with mud-brick faced with limestone blocks. Remains of a basin and drainage channel are in the centre of this court. To the west is a portico with sockets of six red granite pillars, leading westwards to a long narrow room, which may have contained a statue. A passage from the north end of the portico leads westwards to a series of five probable storerooms.

The inner section of the temple consists of an offering shrine paved with red granite, which originally contained the false door and offering slab. North of this shrine is a group of storerooms (?), and immediately east is a corridor of limestone pillars (probably Dynasty VI).

The originally planned granite temple was unfinished at the time of Mycerinus' death, and was completed in limestone and mud-brick by his successor Shepseskaf. A restoration was undertaken in Dynasty VI.

Builders' marks and inscriptions in red ochre are visible on the walls of the central court and on the walls of the corridor of black basalt on the north side near the western end.

Among the finds in the temple were many statues of Mycerinus, as well as stone vases (from the storerooms) and part of an implement for use in the Opening of the Mouth ceremony.¹²

The pyramid is about 108.5 metres square, was originally 66.5 metres high, and has a slope angle of 51° . The first 16 courses of the casing were of Aswân granite, most of the blocks being still in place. Many of them still possess the projecting lugs which received the levers when the stones were being placed in position; this shows that the blocks were put into place before their outer faces were dressed. Only the blocks around the entrance received their final dressing; after the death of Mycerinus the dressing of the remaining blocks was abandoned. From the 17th course to the apex the casing was of fine white limestone but has nearly all been removed.

The entrance (accessible) which is on the north side, is in the fourth course of the granite casing, 4 metres above the base of the pyramid. The ramp is about 31 metres long, descending at $26^{\circ} 2'$, and it is lined with granite from the entrance to the point where it reaches the solid rock, into which it is afterwards hewn. The ramp ends at a fine panelled vestibule. Beyond this vestibule is a horizontal passage which passes three vertical granite portcullis-slabs and eventually reaches a long chamber in which the sarcophagus of the king is believed to have stood originally. A wooden coffin was found in this chamber by Vyse

PLATE VIII

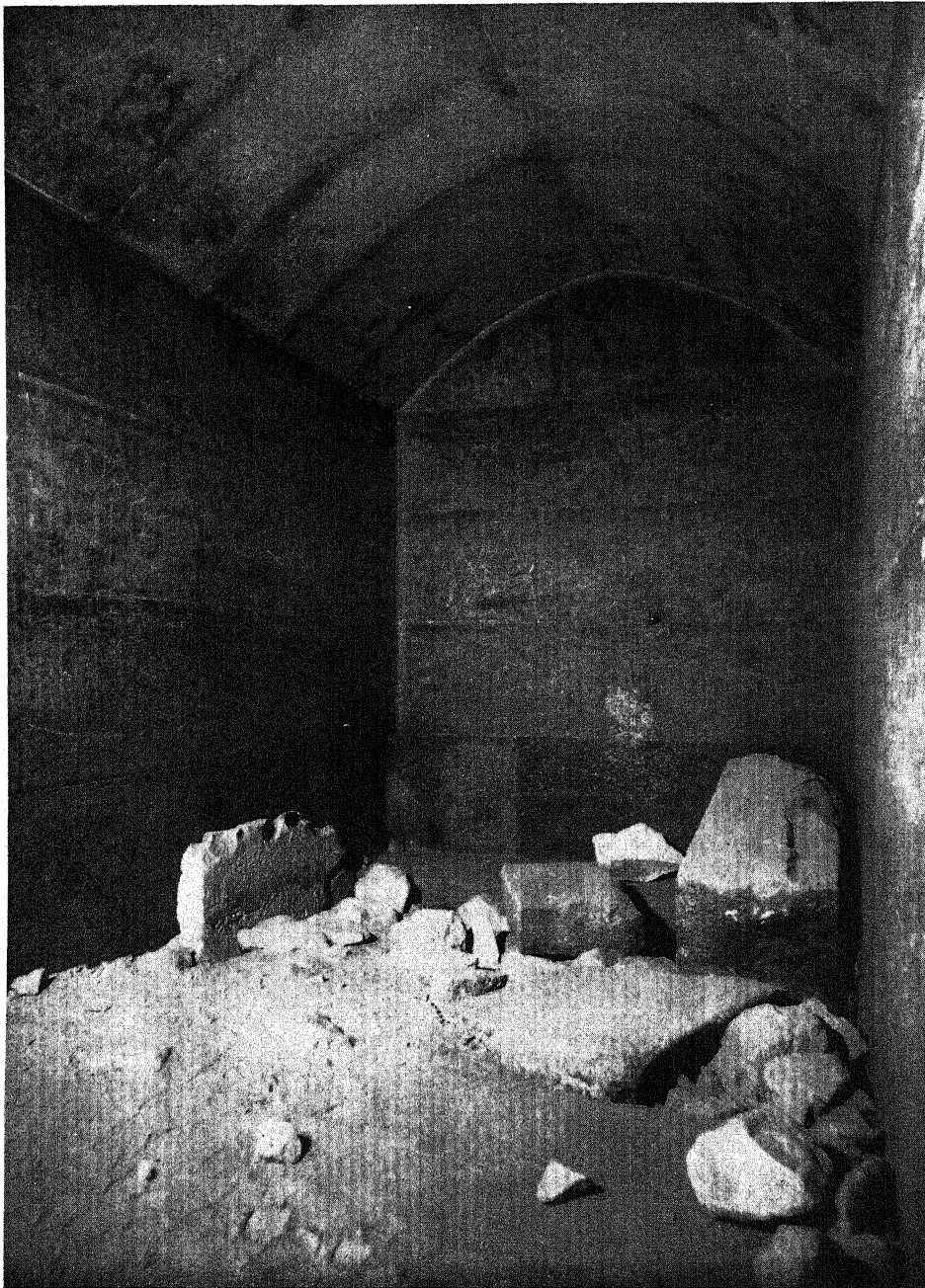


PYRAMID OF MYCERINUS : Antechamber

Photo : T. Herbert Jones and W. Whitbourn

facing p. 114

PLATE IX



PYRAMID OF MYCERINUS: Sarcophagus Chamber .

Photo : T. Herbert Jones and W. Whitbourn

facing p. 115

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in 1837, but it was a restoration of Dynasty xxvi. It bore an inscription which may be translated as follows :¹³

‘ Osiris King of Upper and Lower Egypt, Menkaurē (Mycerinus) living for ever. Born of the sky, conceived of Nut, heir of Geb by whom he is beloved. Thy Mother Nut spreads herself over thee in her name of “ Secret of the Sky.” She caused thee to be as a God in thy name of God, O King of Upper and Lower Egypt, Menkaurē (Mycerinus), living for ever.’

From the upper part of this chamber a passage and ramp extend northwards to the entrance of what was designed as the original pyramid, much smaller than the final structure.

From the western end of the floor level of this chamber is a ramp, lined with granite at its upper end, leading westwards to :

- (i) a flight of steps leading downwards to a room containing six recesses, not certain whether for statues or offerings ;
- (ii) A little further west, the magnificent sarcophagus chamber with walls and arched roof of granite is reached. The roof is of granite slabs pitched end to end and hollowed to a concave form on their under sides. The sarcophagus, which was of basalt decorated with palace-façade panelling, was found in this chamber by Vyse but was sunk off the coast of Spain while being shipped on its way to England. The position of this sarcophagus chamber is well west of the centre of the pyramid.

From the western wall of the chamber which contained the wooden coffin, is a short ramp leading to the roof of the sarcophagus chamber.

On the south side of the pyramid of Mycerinus are three small pyramids, probably of his wives.

The western example is about 36 metres square and 9 metres high, and is composed of large blocks of coarse local limestone, arranged in steps, at least three accretions being clearly visible. No casing stones can be seen. The entrance (inaccessible) leads to a ramp, antechamber and sarcophagus chamber. To the east are the remains of a small temple of mud-brick.

The central example is about 36 metres square and 9 metres high, and is likewise composed of rough local limestone blocks arranged in four well-marked accretions. It was never cased. On the north face is the original entrance leading to a passage which can be followed for a few yards into the interior until it gets too narrow and dirty. It was in the sarcophagus chamber of this pyramid that Vyse found the cartouche of Mycerinus written in red ochre. He also found therein a small granite sarcophagus and fragments of a skeleton, probably of a young woman. To the east are the remains of a small mud-brick temple.

The eastern of these three small pyramids is similarly about 36 metres square, and about 10 metres high. It is likewise of blocks of coarse local limestone, but accretion-faces are not discernible. It was cased at least partly in red granite, some of which remains on the east side. The entrance (inaccessible),

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on the north face, is nearly covered with sand. It leads to a ramp and sarcophagus chamber near the west end of which is a granite sarcophagus sunk into the floor. To the east is a mud-brick temple, larger than those of the other two small pyramids, and in a better condition. It is possible that Queen Khamerer-nebty II was buried in this pyramid.

Enclosing the pyramid and surroundings of Mycerinus are the remains of temenos walls.

IV. THE TOMB OF QUEEN KHENTKAWE.

In a hollow south-west of the Sphinx is the tomb of Queen Khentkawes, who is believed to have succeeded Shepseskaf to the throne, and resembled him in building a tomb in the shape of an enormous sarcophagus instead of a pyramid. She also omitted Rē from her name, and appears not to have identified herself with the Heliopolitan doctrine of sun worship.

Excavations by Selim Bey Hassan suggest, in his view, that her tomb complex included a lower temple and causeway, mainly of mud-brick, as well as a kind of upper temple or tomb chapel contained in the rectangular rock massif which forms the first few metres in height of the tomb structure. The tomb chapel contains a pair of door jambs inscribed with the names and titles of Khentkawes, and a false door with an inscription offering the deceased queen a thousand of each of an assortment of offerings. Just north-east of this chapel is a rectangular structure, supposed by Selim Bey Hassan to be the remains of the house of embalming.

The entrance to the tomb is at the north end of the temple, and consists of a ramp leading downwards and westwards to an antechamber containing two false-doors and six serdab-recesses or offering-chambers, four on the north side and two on the south. One of them contained the shoulder blade of an ox. West of this antechamber is the sarcophagus chamber, most of the floor-space of which is hewn out to receive an enormous granite tomb, several of the broken red granite slabs of which are still visible. South of the tomb is a tiny niche.

At the south-west of this tomb-structure is a large boat-hollow placed with its long axis east-west.

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REFERENCES

1. LEPSIUS, R. *Denkmäler*, I. Blatt 14.
2. CLARKE AND ENGELBACH. *Ancient Egyptian Masonry*, 1930, p. 109.
3. BORCHARDT, L. (ED.). *Beiträge zur Ägyptischen Bauforschung und Altertumskunde*, Vol. I, p. 16.
4. To be published shortly by the writer.
5. GOYON, G. *Les Inscriptions des Visiteurs sur La Grande Pyramide*, Cairo, 1944, passim.
6. *Ancient Egypt*, x, 36-38.
7. BORCHARDT, L. *Einiges zur dritten Bauperiode der Grossen Pyramide bei Gise*, Cairo, 1937, p. 7 f. and plates 3-5 and 10.
8. PETRIE, W. M. F. *History of Egypt*, xith Edn., 1924, p. 60.
9. REISNER, G. A. 'A Family of Builders of the Sixth Dynasty,' in *Bulletin of Boston Mus. Fine Arts*, xi, 1913, 53-66.
10. PETRIE, W. M. F. *Pyramids and Temples of Gizeh*, 2nd Edn., 1885, p. 32.
11. VYSE, H. *Gizeh*, I, 183.
12. REISNER, G. A. *Mycerinus*, 1931, chapter vi.
13. SETHE, K., in *Z.A.S.*, xxx, 94 f.

LITERATURE

1. GENERAL

- VYSE, COL. H. *Operations carried on at the Pyramids of Gizeh*, 1837-1840.
PETRIE, W. M. F. *Pyramids and Temples of Gizeh*, 2nd Edn., 1885.
PETRIE, W. M. F. *Seventy years in Archaeology*, 1931, Chapter II.
REISNER, G. A. *A History of the Giza Necropolis*, Vol. I, 1942.

2. PYRAMID OF KHEOPS.

- WHEELER, N. F. 'Pyramids and their Purpose,' in *Antiquity*, ix, 1935.
BORCHARDT, L. *Einiges zur dritten Bauperiode der Grossen Pyramide bei Gise*, Berlin, 1932.

3. PYRAMID OF KHEPHREN

- HÖLSCHER, U. *Das Grabdenkmal des Königs Chephren*, Leipzig, 1912.

4. PYRAMID OF MYCERINUS

- REISNER, G. A. *Mycerinus*, 1931.

5. TOMB OF KHENTKAWES

- HASSAN, SELIM. *Giza*, Vol. IV, 1943.

6. PRIVATE TOMBS

- JUNKER, H. *Giza*, I, II, III, 1929-38.
HASSAN, SELIM. *Giza*, I-VI, 1932-1946.
FAKHRY, A. *Sept Tombeaux à Gizeh* (Institut Français d'Archéologie Orientale, 1935).

CHAPTER 3

Zâwyet el 'Aryân to Abu Sîr

I. ZÂWYET EL 'ARYÂN : NORTH PYRAMID.

No signs of lower temple, causeway, or upper temple for this unfinished pyramid have yet been found. After the substructure had been hewn and the pyramid and surrounding temenos wall planned, the whole project was abandoned.

The rock-hewn ramp is about 100 metres long and 5 to 7 metres wide, and descends to a depth of about 21 metres. From the entrance southwards it has a slight gradient of 5° – 10° for the first 38 metres, after which it continues for about 24 metres as a horizontal passage. For the remaining distance of about 33 metres it assumes the form of a rock-hewn ramp with a stairway on each side, leading into the sarcophagus chamber. Both ramp and stairway are now (1945) covered by sand.

The sarcophagus chamber is about 25 metres long, 14 metres wide, and 22 metres deep. It contained limestone blocks on which were roughly painted the cartouche of Nebka or Netjerka, a king of Dynasty III who preceded Huni, and who was doubtless the owner of the unfinished tomb.¹ The sarcophagus chamber contained an exquisitely finished oval sarcophagus of polished red granite with a lid having two lugs on each side. This sarcophagus is now (1945) beneath thick sand.

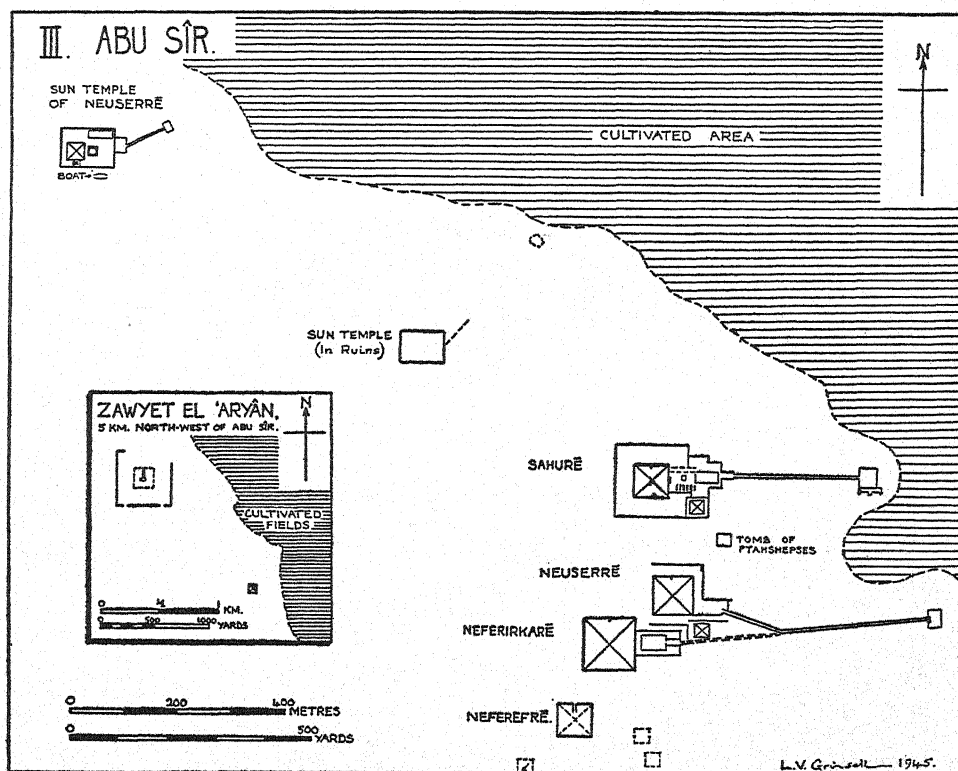
The temenos wall and boundary of the intended pyramid show that the architects had aimed at a pyramid 180–200 metres square, enclosed in a temenos wall about 420 metres square.

II. ZÂWYET EL 'ARYÂN : SOUTH PYRAMID.

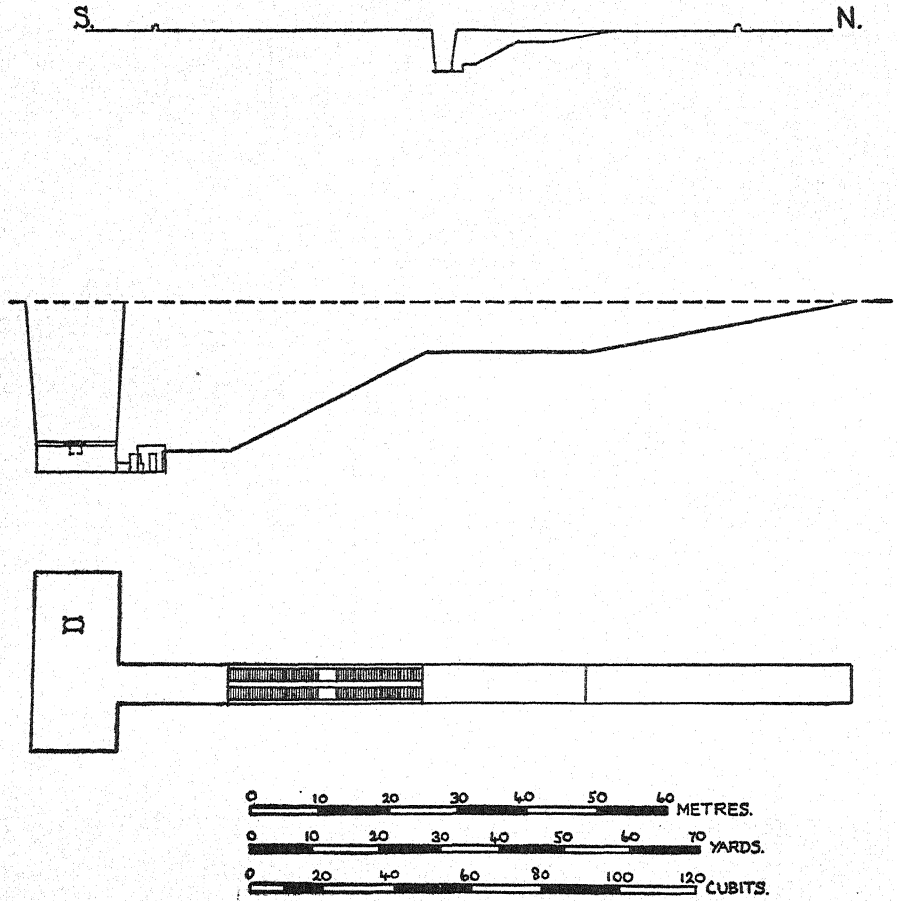
This example is about 1 kilometre south of that just described. There are no visible indications of lower temple, causeway, or upper temple, but it is possible that at least the latter might be revealed by excavation. The pyramid is about 90 metres square and at present about 18 metres high. There is a hollow extending from the north face to the centre. On the north, north-west, and north-east sides were 32 square cells, the purpose of which does not appear to have been determined. The interior of this pyramid is not accessible.

Barsanti's rather unscientific report (c. 1900) suggests that he found two horizontal passages one above the other leading to the approximate centre of the pyramid from a short distance to the north, where access to them seems to have been by a vertical shaft.

ZÂWYET EL 'ARYÂN TO ABU SÎR



ZÂWYET EL ARYÂN. NORTH PYRAMID



AFTER A. BARSANTI AND G. A. REISNER.

FIG. 14

ZÂWYET EL 'ARYÂN TO ABU SÎR

In 1910-11 the site was excavated scientifically by Reisner, who found the pyramid to consist of a core outside of which were 14 accretions, both core and accretions having a slope angle of about 68°. The masonry, in small blocks of local fossiliferous limestone, resembled that of brickwork of Dynasty III.

'The form of the entrance and the plan of the underground chambers are like those in private stairway tombs of Dynasty III. The entrance descends in a sloping passage from the west for 10 metres, then turns at right angles to the south and descends 54 metres to a room cut in the rock underneath the mass of masonry.'²

Reisner concluded that it was probably a stepped pyramid built by King Khaba at the end of Dynasty III.

III. ABU GIRÂB : SOLAR TEMPLES.

(a) *The Solar Temple of Neuserrê, 'The Desire of the Heart of Rê.'*

This monument is on a low spur of desert within a few metres of the Nile Valley and about 1 kilometre north of the pyramids of Abu Sîr. It was built in celebration of the thirty years' jubilee (Sed festival) of Neuserrê, and may be a copy of the solar temple of Heliopolis.³

The approach is by the lower temple or portico, some of the walls of which are still standing. From this a causeway extends south-westwards to an entrance corridor west of which is a rectangular enclosure 100 metres by 80 metres, within which are the following structures :

- (i) A courtyard extending from the entrance to the pyramid-obelisk.
- (ii) Remains of storerooms north of the courtyard.
- (iii) A fine alabaster altar east of the pyramid-obelisk.
- (iv) A small chapel south of the pyramid-obelisk.
- (v) A small courtyard with seven circular basins of alabaster north of the pyramid-obelisk.
- (vi) The pyramid-obelisk, which consisted of an obelisk of mud-brick 33 metres high standing on a truncated pyramid about 40 metres square and 30 metres high, which was cased with red granite. There was a stairway up the truncated pyramid to the obelisk.

Near the alabaster altar is a slab of pink granite bearing a hieroglyphic inscription which includes a representation of the solar temple Δ .

A few metres south of the rectangular enclosure are the remains of a sun-barque, enclosed in a boat-shaped wall of mud-brick, the top of which still protrudes from the sand at the time of writing (1945).

Among the officials of the solar temple of Neuserrê was Tjy, who was a director thereof, and whose celebrated tomb is at Saqqâra.

EGYPTIAN PYRAMIDS

(b) *The Solar Temple of Userkaf: 'The Court of Offerings of Rē'*

About half a kilometre south of the solar temple of Neuserre is a roughly rectangular area of chippings of coarse and fine limestone, granite, and other stones, which is considered to be the remains of the solar temple of Userkaf.⁴

A hard stone vase evidently from this site, inscribed with the name of the solar temple of Userkaf, was found during excavations on the Isle of Kythera in the Aegean.⁵ This is a remarkable instance of trade between Egypt and the Aegean Islands during Dynasty v.

A large priesthood of this sun temple existed and the names and titles of many of the officials are inscribed in the Old Kingdom private tombs. They include Ptahshepses, priest of Rē; Ptahhotpe, priest of Rē and of Hathor; Neferiretnef (whose tomb at Saqqâra was removed to Brussels Museum) was a priest of Rē in this temple; and there were many *wab* priests and other priests of Rē.⁶

(c) *Other Solar Temples of Dynasty V.*

The solar temples of Sahure, Neferirkare and Neferefre have not yet been located, although their existence is known from the titles of their officials, as inscribed in the private tombs.⁷

IV. ABU SÎR: INTRODUCTION.

The pyramids of Abu Sîr are situated on an elevated part of the desert about 1 kilometre south of the solar temple of Neuserre. Before describing them individually it may be noted that they are all of Dynasty v, and include nearly all the royal tombs of that Dynasty, excepting those of the first and last two kings (Userkaf, Isesi and Unis) who were buried at Saqqâra. The first comer, Sahure, naturally chose the best site for his pyramid, and the later kings chose in turn the best positions available to them.

V. ABU SÎR: THE PYRAMID, 'THE SOUL OF SAHURÊ SHINES.'

The pyramid of Sahure is the northernmost member of the group. It is approached from a lower temple, now much ruined. This temple contained an eastern entrance through an eight-columned portico and a southern entrance through a four-columned portico. The eastern portico led to a small room with two columns, west of which was the exit to the causeway.

The causeway is about 200 metres long, and was originally roofed except for a narrow central slit.

At the eastern end of the causeway is the upper temple, the best preserved of all the upper temples of pyramids so far excavated. The outer section is entered from the causeway by a corridor, the limestone walls of which are still about 3 metres high. This corridor leads to the central court, paved with black basalt and originally surrounded by 16 pink granite palm columns, the bases of which are still in place. The walls of this court and the surrounding corridor were decorated with a fine series of reliefs, the subjects including the king vanquishing his enemies; prisoners; the king hunting; the maritime expeditions undertaken during the reign; his Sed festival; processions of divinities;

ZÂWYET EL 'ARYÂN TO ABU SÎR

the king offering to the goddess Bastet; the slaughtering of animals for sacrifice; offering bringers and the transport of temple furniture.

The inner section of the temple is approached from the central court by a short passage leading to the remains of the five statue niches, north of which are two double-storeyed groups of five storerooms. South of the five niches are other storerooms. A doorway from the south end of the five niches leads to two antechambers and the offering shrine. The false door and offering table, formerly in this shrine, were long ago removed.

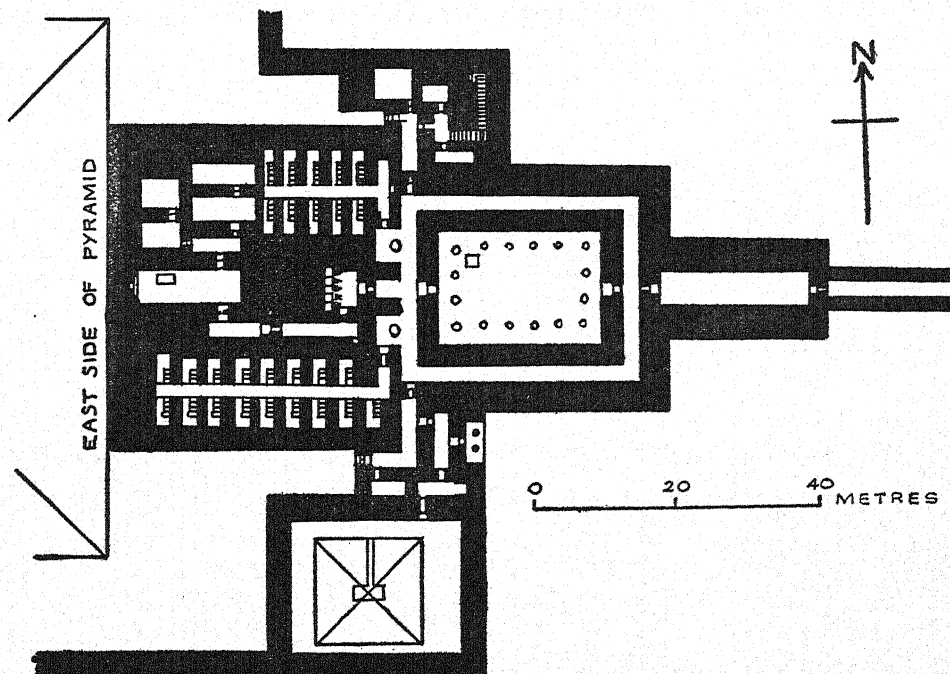


FIG. 15 UPPER TEMPLE OF SAHURÊ (after Borchardt)

South of the central court is a side entrance in the form of a two-columned portico, the walls of which were decorated with reliefs of offering bearers.

The pyramid was originally 78 metres square and 48 metres high, the slope angle being about $50^{\circ} 36'$. The masonry is of the poor quality normal in pyramids of Dynasty v, consisting chiefly of the local coarse limestone mixed with sand and rubble. The casing (doubtless of fine white limestone) has all been removed, exposing six (possibly seven) inner facing walls.

In the centre of the north side, and almost on the ground level, is the fine but exposed entrance roofed and walled with black granite. This leads to a

EGYPTIAN PYRAMIDS

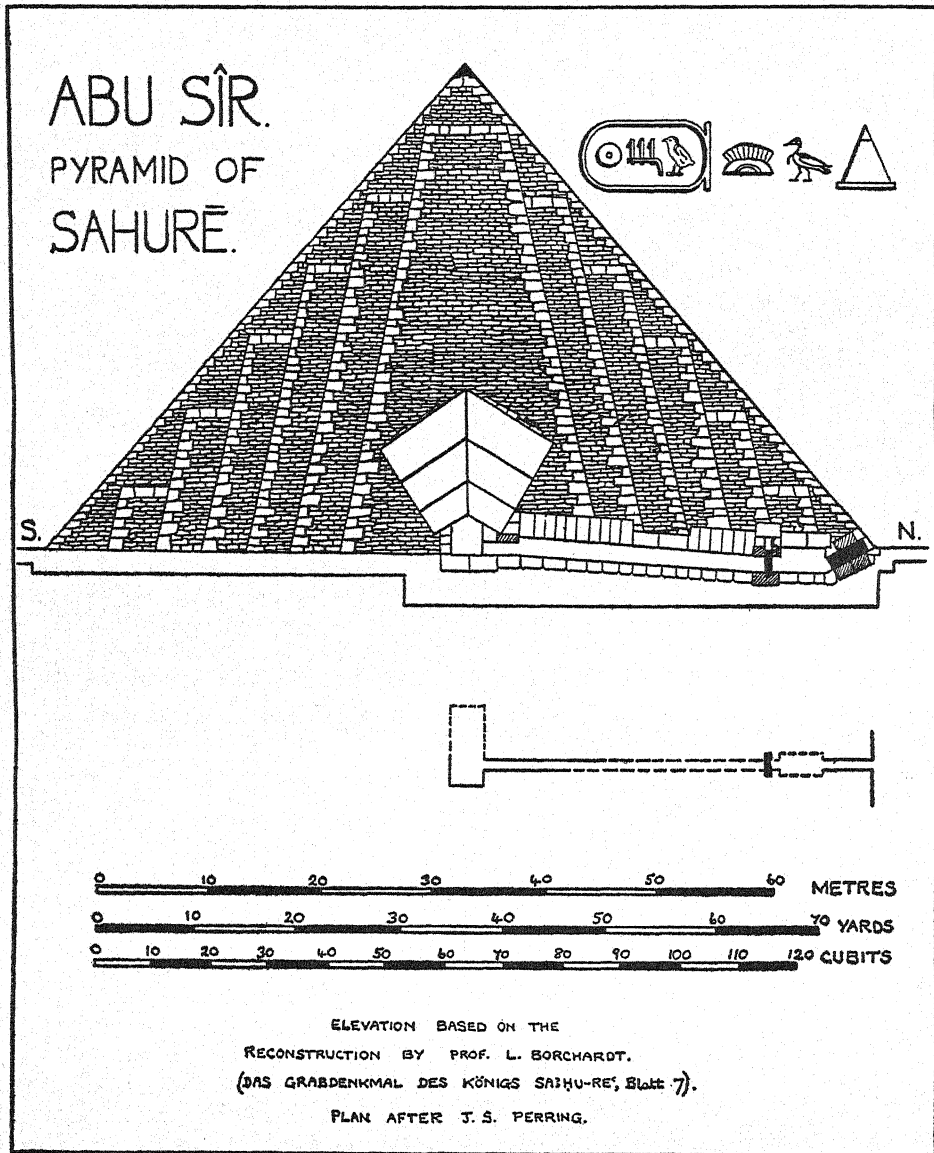


FIG. 16

passage roofed and walled with fine white limestone, which is however accessible for only a few metres, as far as the vertical portcullis slab of granite. The sarcophagus chamber had a pointed roof of massive limestone blocks, and this method of roofing royal sarcophagus chambers was normal during Dynasty v.

South-east of the pyramid, and enclosed by a high wall, was a small pyramid 12 metres square. This had a core of small blocks of the local coarse limestone and a casing of larger blocks of fine white limestone part of which is still visible. The entrance was in the centre of the north side and was connected by the usual passage with the central chamber.

Surrounding the large pyramid, and enclosing also the smaller, was a temenos wall.

VI. ABU SÎR: THE PYRAMID, 'THE SOUL (BA) OF NEFERIRKARĒ.

SahurĒ was succeeded by NeferirkarĒ whose pyramid complex is best described next, although it is separated from that of SahurĒ by the pyramid of NeuserrĒ.

The lower temple of NeferirkarĒ had an eastern entrance through a portico of eight columns, and a south-western entrance leading to a portico of four columns. Both porticos lead to four small rooms, from the northernmost of which is an exit to the causeway. This temple is now a ruin, and only a few blocks of granite, basalt and limestone can be seen.

The causeway was walled with black basalt, some of the wall slabs still remaining. The western part of its course was diverted by NeuserrĒ to serve the upper temple of his own pyramid.

The upper temple of NeferirkarĒ underwent several alterations in plan, apparently during the reigns of his successors NeferefrĒ and NeuserrĒ. The structure as now visible comprises an entrance corridor leading to a central court, containing limestone bases which at one time supported wooden lotiform columns. To the west was the inner section consisting of the five statue niches, storerooms, anterooms, and an offering shrine. Part of the red granite false door is still visible although not in its original position; the offering slab was removed long ago.

Some magnificent wooden dummy vases inlaid with faience were found in this temple and are (or were) in the Berlin Museum.

The pyramid of NeferirkarĒ is the largest member of the Abu Sîr group, being originally 106 metres square, and 70 metres high, with a slope angle of about 53°. The pyramid originally had 6 accretion-faces, some of which are well seen on the north side above the entrance, and elsewhere. The core and accretions are of small blocks of the local coarse limestone, but both core and accretions were faced with larger blocks of fine white limestone, with which the finished pyramid was probably originally cased. The lowest course was cased with granite.⁸

On the north side, near the entrance, are a few small blocks of granite. The entrance and passage are inaccessible. The sarcophagus chamber had the usual pointed roof of thick limestone slabs characteristic of pyramids of Dynasty v; the horizontal passage was roofed in the same way.

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VII. ABU SÎR: THE PYRAMID, 'ENDURING ARE THE PLACES OF NEUSERRĒ.'

This king adapted into his pyramid complex the lower temple of Neferirkarē, and also most of his causeway, part of which he diverted to the north-west.

The upper temple is remarkable in that the outer and inner sections were built on different axes in order to avoid disturbing pre-existing tombs. The usual entrance corridor leads westwards from the causeway, and is flanked by rows of storerooms. To the west is the central court paved with black basalt and bordered by 16 papyrus columns of pink granite. Near the north-west corner of this court there is believed to have been an offering table. West of the central court is the inner section of the temple, containing the five statue

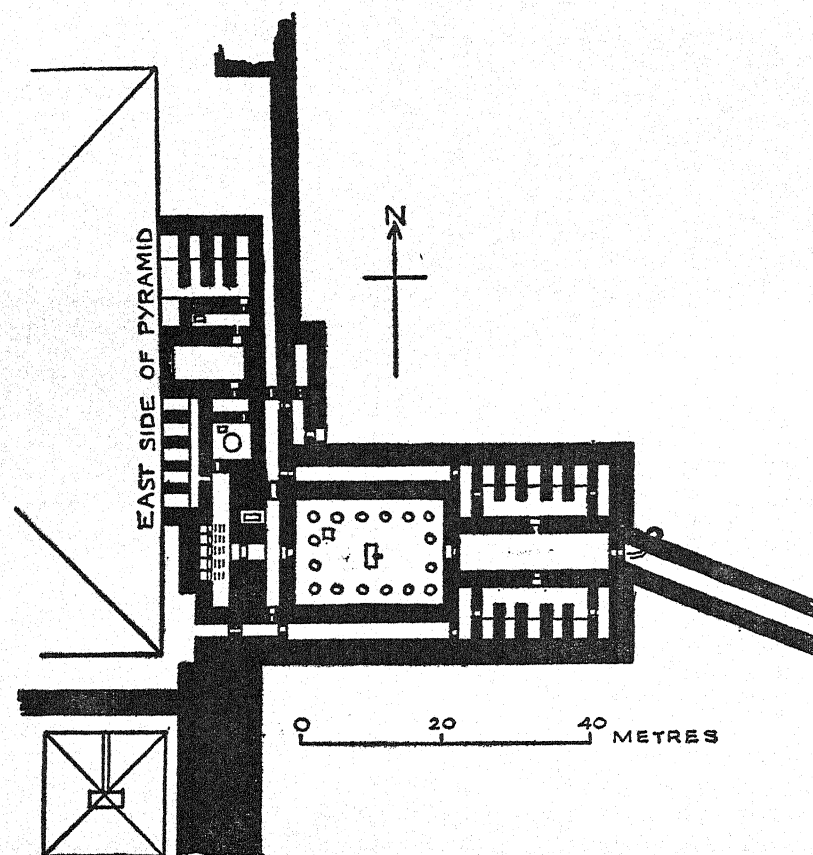


FIG. 17

ABU SÎR. UPPER TEMPLE OF NEUSERRE (after Borchardt)

ZÂWYET EL 'ARYÂN TO ABU SÎR

niches, north of which are doorways leading to five storerooms, two anterooms (one of which contained a statue and a column), and the offering shrine, which contained the foundations of a granite false door. A room to the north is believed to have contained an offering table, and further north were more storerooms. This temple was never completed.

Reliefs from the walls of this temple showed scenes of the king overcoming his enemies; the king hunting; and the slaughtering of animals for sacrifice.

The pyramid was about 80 metres square and 52 metres high, with a slope angle of about $51^{\circ} 50'$. The casing of fine white limestone has all been removed, exposing about 5 inner facings each of which has a slope angle of about 77° . The body of the pyramid is of the local coarse limestone mixed with sand and rubble.

The entrance, which is surrounded by several slabs of granite, is now inaccessible. It led to a short ramp, a vestibule, and a long passage which contained three vertical portcullis slabs of granite. At the end was the antechamber with a sarcophagus chamber connected by a short passage to the west. The roof of the sarcophagus chamber was pointed.

At the south-east corner, and south of the upper temple, was a small pyramid, about 15 metres square and 11 metres high, which contained an entrance at the north end leading to a passage and central chamber.

On the north and south sides of the large pyramid are the remains of a temenos wall.

VIII. ABU SÎR: THE PYRAMID, 'DIVINE ARE THE SOULS OF NEFEREFRE.'

A short distance south-west of the pyramid of Neferirkarê are the ruins of that of Nefererê which appears not to have been completed. It consists of a flat topped mass of masonry about 60 metres square. Only about 5 courses of limestone are visible but there are probably 3 or more additional courses beneath the sand. From the centre of the north side is a passage extending southwards to the centre of the pyramid where there is a large cavity for the sarcophagus chamber.

There is no evidence of any temples or causeway connected with this monument.

IX. OTHER TOMBS.

(a) *The Tomb of Ptahshepses.*

Of the private tombs at Abu Sîr, the only example now worth visiting is that of Ptahshepses situated south-east of the pyramid of Sahurê. Ptahshepses lived during Dynasty V, and was Overseer of all the Works of the King, Sole Confidant, Chief of the Secrets of the House of the Morning, and Vizier. South of the modern entrance to this tomb is the original pillared hall, and the tops of some pillars are protruding out of the sand. On the walls west of the entrance are damaged reliefs showing the transport of statues, and a relief on the wall east of the entrance shows the deceased being carried on a palanquin.

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On entering the modern door three stairways leading to statue niches are seen on the left, and on the north wall of this hall are scenes which include a standing figure of the deceased. On the east wall are scenes of goldworkers and sculptors, and market scenes. A passage eastwards leads to a hall of two columns, and reliefs in this passage and hall show the deceased with his wife and family, and boating scenes. Near the north-west corner of this two columned hall, at the bottom of the wall, is a hieratic inscription (see page 15).

(b) *Other Monuments.*

To the east, south, and south-west of the Abu Sir group of pyramids are several roughly square patches of limestone rubble, the last remnants of pyramids, private tombs, or perhaps even solar temples, belonging most probably to Dynasty v.

ZÂWYET EL 'ARYÂN TO ABU SÎR

REFERENCES

1. DRIOTON AND VANDIER. *Peuples de l'Orient Méditerranéen*, II, l'Égypte, p. 201.
2. REISNER, G. A., in *Bulletin of Boston Museum of Fine Arts*, Dec. 1911.
3. ERMAN, A. *La Religion des Égyptiens*, Paris, 1937, p. 129.
4. BORCHARDT, L. *Das Grabdenkmal des Königs Sahure*, I, 149-150.
5. EVANS, SIR A., in *Journal of Hellenic Studies*, XVII, 349; Sethe, K. in *Z.A.S.*, LIII, 55-58.
6. PIRENNE, J. *Histoire des Institutions . . . de l'Ancienne Égypte*, II.
7. PIRENNE, J. *Loc. cit.*, II.
8. BORCHARDT, L. *Nefer-ir-ke-re*, 1909, p. 39 and Blatt 2.

LITERATURE

1. ZÂWYET EL 'ARYÂN

- LEPSIUS, R. *Denkmäler*, XIII, Blatt 32.
BARSANTI, A., in *Annales du Service des Antiquités*, II, 92-94; VII, 190, 257-286;
VIII, 201-210; XII, 57-63.
REISNER AND FISHER, in *Bulletin of Boston Museum of Fine Arts*, Dec. 1911,
pp. 55-58.
REISNER, G. A. *Tomb Development*, 1931.

2. ABU GIRÂB

- BORCHARDT AND BISSING. *Das Re-Heiligtum des Königs Ne-Woser-re*, 3 vols.,
1905-1923.
BISSING AND KEES. *Rathures*, 1922.

3. ABU SÎR

- BORCHARDT, L. *Das Grabdenkmal des Königs Sahure*, 2 vols., 1910-1913.
BORCHARDT, L. *Das Grabdenkmal des Königs Ne-Woser-re*, 1907.
BORCHARDT, L. *Das Grabdenkmal des Königs Nefer-ir-ke-re*, 1909.
MORGAN, J. DE Tomb of Ptahshepses, in *Revue Archéologique*, 1894, 18-33.

CHAPTER 4

North Saqqâra

I. THE PYRAMIDS OF IPUT AND KHUIT.

- (a) *Iput* (Mother of Pepy I). There is no sign of lower temple or causeway, although there are the remains of an upper temple consisting of three courts and at the west end three statue niches, north of which was an offering shrine containing a limestone false door, the base of which is still visible.

The pyramid is $15\frac{1}{2}$ metres square and at present $4\frac{1}{2}$ metres high. The angle of slope is about 65° . In the approximate centre of the north side was a red granite false door (no longer visible). Three courses of the casing remain.

East of the centre of this pyramid, Firth and Gunn found a limestone sarcophagus containing an inner coffin of cedar, in which were the bones of the queen, and portions of her necklace and gold bracelet which are now in Cairo Museum.

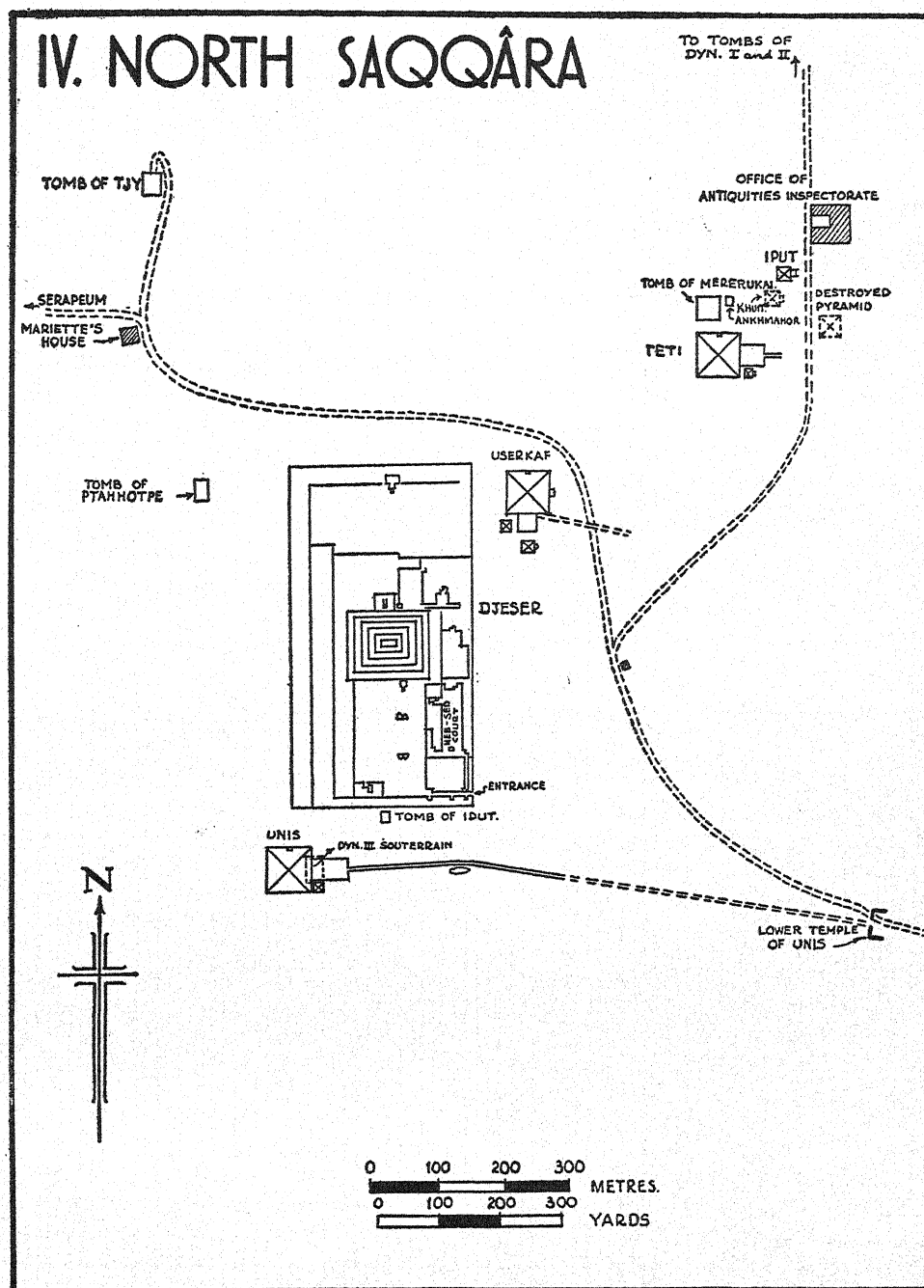
- (b) *Khuit*. South of the pyramid of Queen Iput stood that of Queen Khuit, now destroyed. There was no evidence of lower temple or causeway, but the upper temple contained three statue niches and an offering shrine.

II. THE PYRAMID, 'ENDURING ARE THE PLACES OF TETI.'

Of the lower temple little or nothing can be seen, and of the causeway only a small portion, apparently of mud brick, is visible at the western end.

Of the upper temple little remains, but an unpublished plan by M. J-P. Lauer shows that its arrangement was followed very closely in the upper temple of Pepy II which is in much better condition.

A corridor from the east end, flanked by groups of storerooms, led into the central court which was probably lined with wooden columns (not stone pillars as in the temple of Pepy II)¹. West of the central court was a stairway (still visible) leading to the five statue niches, north and south of which were storerooms. To the west, and abutting against the east side of the pyramid, was the offering shrine which contained a sandstone false door, the base of which is still *in situ*. Fragments of limestone roof slabs, ornamented with five-rayed stars, and portions of alabaster flooring are scattered among the ruins of the temple. On the north side of the pyramid, against the entrance, was a small offering shrine which contained a basalt false door.



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The pyramid is 60-65 metres square and at present some 20 metres high. It is very ruined, the core and inner facings being of the very coarse limestone and rubble usual in Dynasties v and vi. Blocks of the casing of fine white limestone were exposed on the east side by Quibell.²

The entrance, in the approximate centre of the north side, is now blocked. It led to a downward ramp about 15 metres long and inclined at approx. 20°, at the bottom of which was a vestibule. This led to a horizontal passage with three granite vertical portcullis slabs, at the end of which was an antechamber. On the east of this was the serdab and on the west was the sarcophagus chamber, near the western end of which was a basalt sarcophagus. The chambers had pointed roofs decorated with five-rayed stars, and their walls were inscribed with Pyramid Texts.

South-east of the pyramid of Teti, and south of the upper temple, is a small pyramid 16 metres square and at present about 4 metres high. It has a core of coarse limestone and a casing of fine white limestone, four courses of which remain on the north and east sides. The entrance, in the centre of the north side, is blocked with sand. East of this pyramid was a small temple, of which two beautiful red granite basins are still visible.

III. THE PYRAMID, 'PURE ARE THE PLACES OF USERKAF.'

No lower temple has yet been found, but its position must be at the eastern end of the basalt paved causeway which leads to the upper temple.

The outer section of the upper temple is unique in being against the south side of the pyramid. It is badly damaged by the shafts of Saitic tombs. The most conspicuous feature is the central court paved with black basalt, and surrounded by sockets which once contained red granite pillars. It is natural that the pyramid complex of Userkaf, the first king of Dynasty v, should contain elements derived from those of Dynasty iv, and these elements include the central court of the upper temple, with its massive red granite pillars resembling those of Kheops and Khephren. The walls of the temple were ornamented with limestone reliefs, and a scene of a procession of nome representatives is still in place. A very large red granite statue-portrait of Userkaf was found near the south-west corner, and fragments of other statues were also discovered.

Against the east side of the pyramid was the inner section of the temple, including the offering shrine of limestone lined with granite and paved with black basalt.

The pyramid was originally about 70 metres square and 44.5 metres high. The core is composed, not of small blocks of coarse limestone characteristic of other pyramids of Dynasty v, but of larger blocks similar to those of the pyramids of Dynasty iv. About four inner facings are visible. Some of the casing is still in position on the south side.

The entrance, in the centre of the north side, is lined with granite, but is now blocked. From it there extends a downward ramp at 26° 35' for 23.75 metres. This led to a horizontal passage which contained a granite vertical portcullis slab. This passage led to serdab recesses on the east, rather north of

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the centre of the pyramid. At the south end of the passage was an antechamber, on the west side of which was the sarcophagus chamber containing a basalt sarcophagus. This chamber had a pointed roof. All the inner chambers were lined with fine white limestone.

Immediately south of the upper temple of Userkaf are the remnants of a small pyramid 18–20 metres square and at present about 6 metres high, with a slope of 50°–55°. The core is of coarse limestone and the casing (of which one block is still visible on the north side) is of fine white limestone. The entrance, in the centre of the north side, leads to a downward ramp at the end of which is the sarcophagus chamber, which is half destroyed, exposing its pointed roof of massive blocks of fine white limestone, typical of Dynasty v. Much of the material from this pyramid was used in building the neighbouring Saïtic tombs. Adjoining the east side was a small offering shrine now destroyed.

West of the upper temple of Userkaf was a small pyramid about 15 metres square, with no associated offering shrine. This likewise had an entrance on the north side, leading to a passage and chamber.

IV. THE PYRAMID AND SURROUNDINGS OF DJESER.

The king for whom the Step Pyramid was built was known during his own lifetime, and for many centuries afterwards, as Netjerierkhet. He was not referred to as Djoser until Dynasty xii.

No lower temple to the pyramid complex of Djoser has yet been found; neither has any causeway yet been located leading to the pyramid enclosure.

Unless otherwise stated all the masonry of the pyramid complex of Djoser is of fine white limestone, except the core of the pyramid and other invisible portions, which were of coarse limestone.

The entrance to the pyramid enclosure is on the east face, a few metres north of the south-east angle. A narrow opening, through two dummy doors represented in the open position, leads to the fine colonnade which has twenty fasciculated columns on each side. These columns 'seem to be a reproduction in stone of wooden columns whose form is in turn based on a support made from the stems of reeds bound together in bundles.'³ This colonnade was roofed with blocks of limestone shaped like palm logs and originally painted red; it has been recently restored by the Service of Antiquities.

At the western end of this colonnade is a rectangular hall at right angles to the former, and consisting of four pairs of double columns.

Further west, and still inside the temenos wall, is a small tomb chapel or offering shrine, perhaps belonging to the tomb immediately to the south, known as the South Tomb or Tomb of the South Enclosure Wall.

The South Tomb may be visited by previous arrangement with the Service of Antiquities at Cairo. The entrance is by a stairway from the west end, which leads past a shaft (formerly full of offering vases) to a passage. This follows into blue tile chambers containing faïence reliefs of Djoser wearing the crowns of Upper or Lower Egypt. Nearby is the great pit-grave, 7 metres square and 28 metres deep, at the bottom of which is a granite chamber presumed to have been an alternative tomb for Djoser.

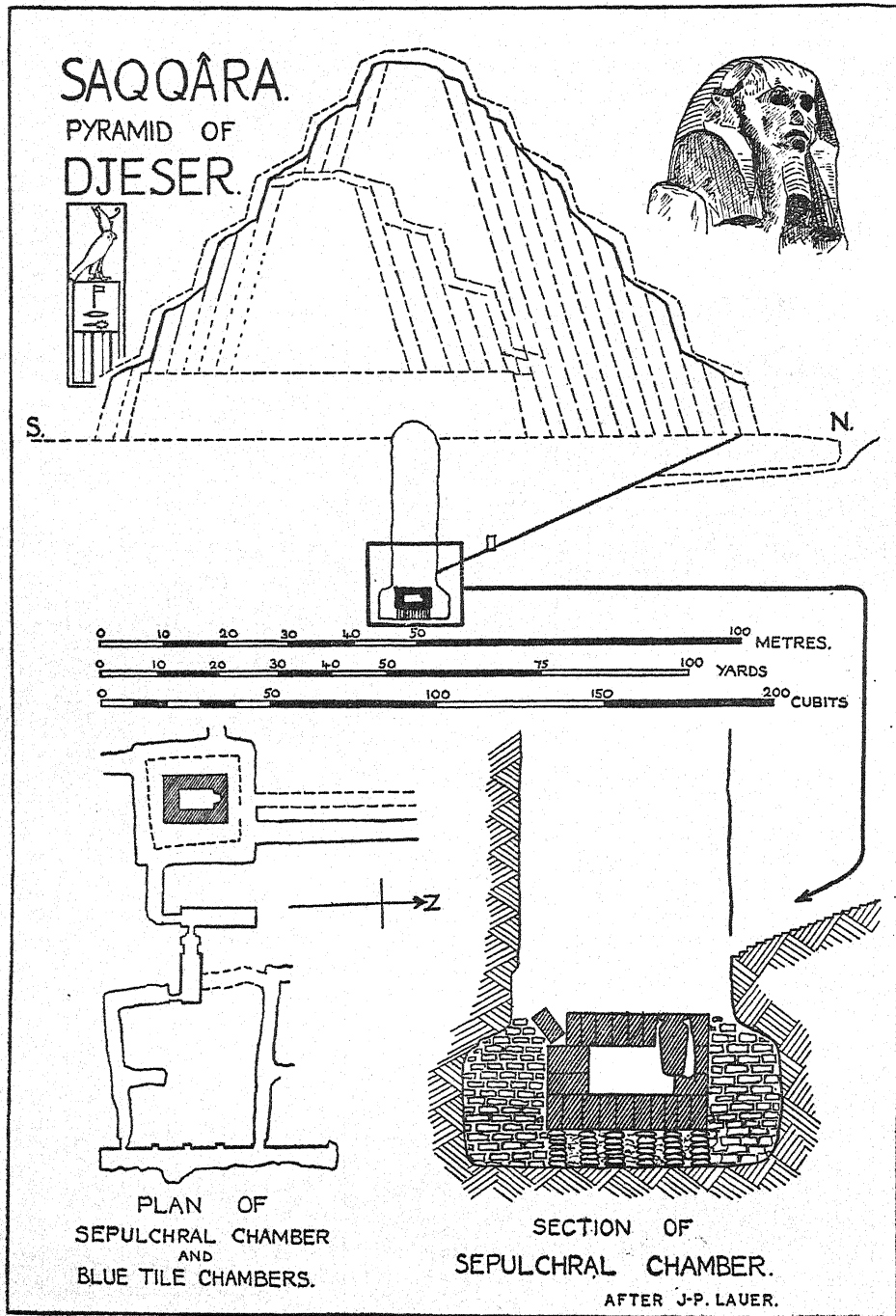


FIG. 18

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Between these structures and the south side of the Pyramid is a great courtyard which contains two small structures shaped like a capital B, and an altar or daïs at the north end.

East of the great court is the Heb-Sed court, approached from a passage just inside the entrance to the colonnade. It consists of an oblong courtyard, on the east and west sides of which are shrines possibly for the nome-divinities of Upper and Lower Egypt. At the south end is the remains of a platform with two stairways, and to the west is a temple with three fluted columns joined to walls by supporting piers. This temple was roofed with limestone slabs shaped and coloured to simulate palm logs.

The Sed Festival was an event of considerable importance in ancient Egypt and it is well to consider it briefly here. It appears that in predynastic times the royal power was given for only 30 years, after which the king was deposed or even put to death.⁴ The Sed Festival appears to have evolved as an adaptation of this practice to more humane conceptions arising from the development of civilisation. The killing became at most a mock killing, and the monarch dedicated himself anew to the service of his country for a further period. Although the ceremony originally had to take place at the end of 30 years' reign, it is known that several kings celebrated the festival before they had been reigning for that period.⁵

'In this particular funerary enclosure there could be no question of a temple erected to celebrate the real "Sed" feast during the earthly life of the king, but rather of a monumental representation intended to recall perpetually the memory of this important ceremony, or perhaps of a temple where the king could re-live this jubilee feast after death, and thus receive eternal confirmation of his position and of his royal powers.'⁶

C. G. Seligman has drawn attention⁷ to a remarkable resemblance between the rejuvenation ceremony of the chief of the Baganda tribe of the Upper Nile and the ancient Egyptian Sed Festival, even suggesting that the former may have been derived from the latter.

Near the north-east corner of the Step Pyramid are two rectangular structures, known as the Southern and Northern Buildings, which were probably shrines for Upper and Lower Egypt. The Southern Building has a façade of fluted columns and a small shrine with graffiti of Dynasty XIX on the walls. The Northern Building has a façade with three papyrus columns.

West of the Northern Building is a court, at the south-west end of which, abutting on the north side of the pyramid, is the serdab containing a cast of the original seated statue now in the Cairo Museum. In the serdab wall in front of the statue are two holes, possibly for burning incense before the statue, but probably to enable the *ka* in Djoser's statue to see.

Immediately west of this serdab and still abutting on the north face of the pyramid, is the upper temple. The unusual situation on the north side of the pyramid is noteworthy. From the entrance, near the south end of the east side, a corridor leads after various right-angled turns to two open courts, one of which contains the entrance to the pyramid. West of these courts are two rooms each

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containing a circular basin and drainage channel. Some of the other rooms appear to have been storerooms. Of this temple little more than the foundations remain.

Just inside the centre of the north enclosure wall of the entire pyramid complex is the base of an altar or daïs.

The pyramid has a rectangular base, 120 metres west-east and 108 metres north-south, and is about 60 metres high. The five main stages in its construction are as follows :

- (a) The digging of a shaft 7 metres square and 28 metres deep, at the bottom of which a built-in granite sepulchral chamber was placed. In the roof of this was a hole for introducing the remains of Djeser, and this hole was afterwards stopped up by a granite plug.
- (b) The construction of a mastaba 63 metres square and 8 metres high above the square pit. The material of this mastaba was coarse rubble, cased with two layers of fine white limestone.
- (c) Extension of this mastaba for a short distance eastwards to include graves prepared for members of Djeser's family. This made the plan of the structure rectangular with an east-west long axis. It was surrounded by a wall which was actually higher than the mastaba, and the latter was therefore invisible to all except those within the enclosure.
- (d) It may have been for this reason that Djeser, or his architect Imhotep, decided to increase the height of the mastaba core and to add a series of accretion-walls around it, the outer walls being lower than the inner. Thus was the pyramid-shaped structure formed, which originally had four steps.
- (e) This was later extended to the north and enlarged by the addition of two more steps, producing the final pyramid of six steps, the face of each of which has a slope-angle of about $72^{\circ} 30'$, and was originally cased with fine white limestone.

With the foregoing information at hand, the external appearance of the pyramid may now be studied. On the western side little of interest is at present exposed. On the southern face, much of the masonry has fallen along the line of junction between the primary mastaba and the pyramid, thus exposing the outline of the original mastaba. On the eastern face, the remnants of three successive casings on the ground level are worthy of note.

On account of its unsafe condition the internal arrangements of the pyramid are not normally accessible. Permission to view the interior may however be applied for from the Service of Antiquities, Cairo. In view of its unsafe condition and relative inaccessibility it is not proposed to describe more than the most important parts of the interior.

The original entrance was on the north face of the pyramid and proceeded as a long rock-hewn flight of steps leading downwards as far as the top of the sepulchral chamber.

PLATE X



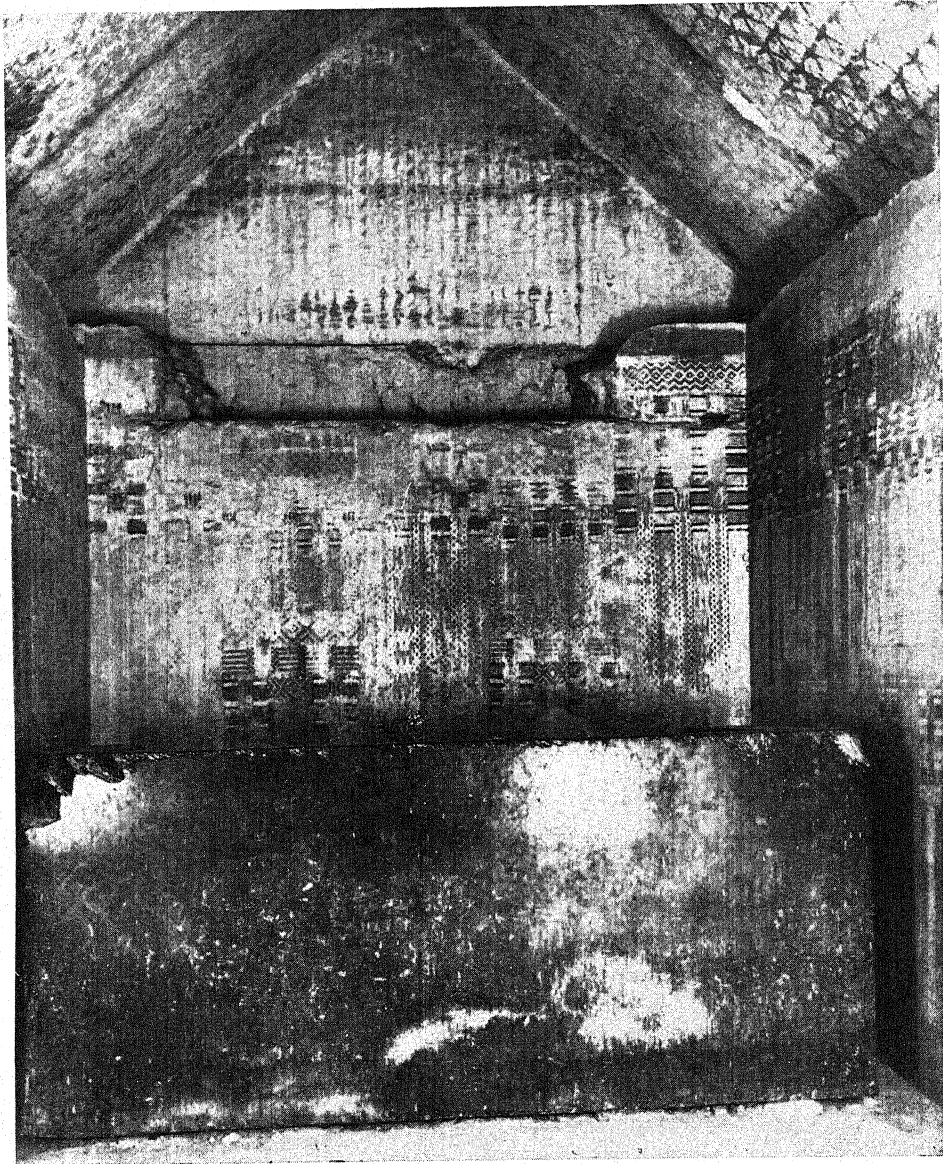
STEP PYRAMID OF DJESER : Vertical Air-photograph

R.A.F. Official

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facing p. 136

PLATE XI



PYRAMID OF UNIS: Sarcophagus Chamber

Photo : A. F. Kersting

facing p. 137

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The second (but probably roughly contemporary) entrance was in the floor of the temple at the north, and began as a flight of steps leading downwards towards the pyramid. It then continued as a roughly horizontal passage which is probably partly of later date, and this passage eventually leads into the original stairway a short distance above the top of the sepulchral chamber. The latter consists of a tomb of red granite placed in a pit. The interior dimensions are 3 metres by 1.66 metres by 1.66 metres, and it is uncertain whether a wooden coffin was contained therein. The tomb is in the approximate centre of the original mastaba but some distance south of the centre of the pyramid. It is possible that a mummied foot found in this tomb in 1934 may be the only remaining portion of the body of Djoser.

A short distance east of the granite tomb are two blue-tile chambers, the walls of which are richly ornamented with blue faience tiles. A portion of the wall of one of these is now in the Egyptian Museum at Cairo. The tiles are designed to imitate a wall of blue matting.

There are also some deep underground galleries beneath the pyramid, where Quibell and Lauer in 1933 found two alabaster sarcophagi and a store of about 30,000 hard stone vases, many of which are exhibited in the Museum of the Inspectorate of Antiquities at Saqqâra. One of the alabaster sarcophagi contained a coffin formerly covered with gold which had been stripped off by robbers. It contained the remains of a child 8 years of age. In another gallery beneath the pyramid are some stelae with Djoser's portrait in relief.

The whole complex of the monuments of Djoser is enclosed in a temenos wall 550 metres long and 280 metres wide, the long axis of which is approximately north and south. This wall is 'faced on the outside with fine white limestone masonry of small blocks, built in imitation of the mud-brick walls of an archaic fortress or fortified town.'⁸ At various places along its length are dummy doors, the only true entrance being, as already noted, slightly north of the south-east corner.

The chief features of this pyramid-complex have now been briefly reviewed. It remains to quote M. Lauer's brief summary of its most important architectural interest :

'It is easily understood that the architect, for this first great construction in stone, where so many innovations were demanded, was naturally inclined to adapt, as far as possible, the forms, lines, proportions and details approximate to the brick, wooden, or reed constructions of his time, and this gives these buildings their special character.'⁹

V. THE PYRAMID, 'BEAUTIFUL ARE THE PLACES OF UNIS.'

The lower temple, situated on the desert edge by the road from Memphis to Mariette's House, is being excavated at the time of writing (October 1945), and limestone walls and pink granite palm columns have already been uncovered.

From the lower temple a fine causeway extends westwards for some 660 metres to the upper temple. This causeway is about 6.70 metres wide (including the walls) and is paved and walled with fine white limestone. The walls are decorated with reliefs, the subjects depicted being similar on both sides, as far

EGYPTIAN PYRAMIDS

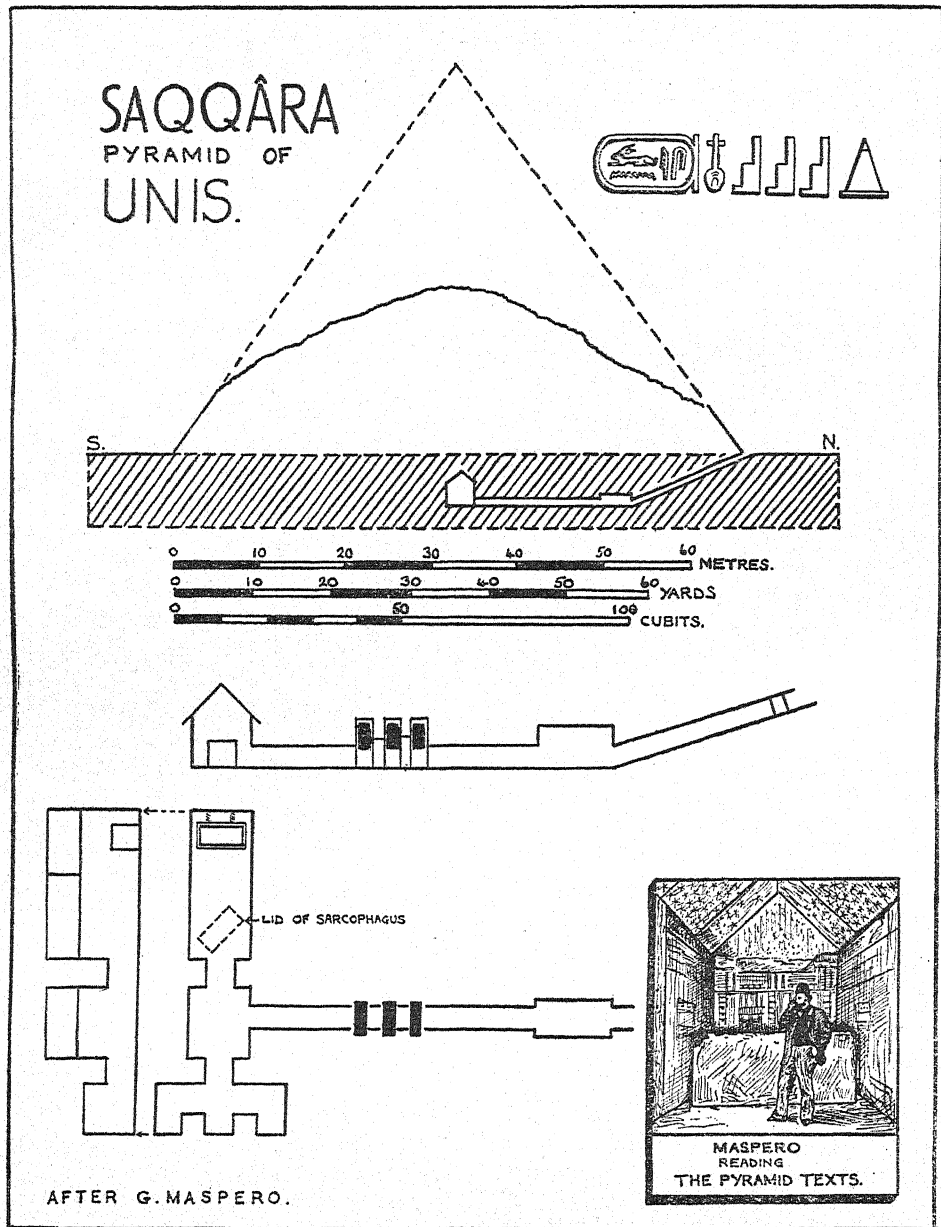


FIG. 19

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as can be ascertained from the surviving fragments. These subjects, enumerated in order from the lower to the upper temple, include handicrafts and market scenes (gold working; making vases; weighing; cutting fish), boating scenes, the transport by boat of pink granite columns and architraves from the isle of Elephantine (Aswân) for the funerary temples of Unis; defaulters or prisoners; animals being led in procession; a procession of divinities; and the bringing of offerings from various localities. The causeway was originally roofed with limestone slabs decorated with five-rayed stars, and some fragments of roofing slabs remain.

About 140 metres east of the entrance to the upper temple the causeway changes direction, and south of this point there is a large rock-hewn barque lined with blocks of grey limestone.

The upper temple is somewhat ruined but enough remains to show the main features. The entrance doorway was unfinished at the time of the death of Unis and was completed by his successor, Teti, whose name appears on one of the jambs. The entrance corridor, which was flanked by storerooms, leads to a central court paved with alabaster and surrounded by 16 palmiform columns, mostly of pink granite although at least two were of red sandstone. West of the central court is the inner section, comprising the usual five statue niches, five storerooms, and other groups of storerooms, as well as two antechambers and the offering shrine. The pink granite backing stones of the false door are still in position in the offering shrine, but there is no sign of the offering table. Traces of a bench or side-table for offerings were found along the north wall of the offering shrine by M. Lauer.

The pyramid is about 67 metres square and 19 metres high, but it was originally about 44 metres high. The exterior is in a ruined state. There is little or no sign of accretion-walls in its construction but such may well have existed. The well-worked casing-stones of fine white limestone on the north side near the entrance are worthy of note. About 1937 M. Lauer found, on the casing stones of the south side, a hieroglyphic inscription which is the most complete version yet known of an inscription placed on certain buildings of the Memphite necropolis which were repaired under the direction of Khamuas during the reign of his father Ramesses II. Similar inscriptions occur at the Mastabet Fara'ôn, the solar temple of Neuserre, and near the pyramid of Sahure. Built into the south face of the pyramid are blocks of fine white limestone with low relief decoration derived from the pyramid complex of Djedkarê-Isesi.

In the approximate centre of the north face, and with its ceiling on the ground level, is the entrance (accessible), originally blocked by a limestone plug. The ramp descends at 22° for a distance of 14.35 metres to a vestibule, higher and wider than the ramp. From this vestibule there extends a horizontal passage past three vertical granite portcullis slabs, and after a distance of 18 metres from the bottom of the ramp it reaches the antechamber, which has a pointed roof. East of the antechamber is a short corridor leading to three serdab-recesses. To the west is another short corridor leading to the sarcophagus chamber, which had a pointed roof decorated with five-rayed stars against a blue background. The red guide-lines used for spacing out the stars may be

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detected on some of the roof-slabs of this pyramid. Near the west end of the chamber is the sarcophagus of highly polished basalt or black granite, the lid of which is on the floor nearby. The walls surrounding the sarcophagus are lined with alabaster and adorned with a palace-façade decoration coloured in green and black.

The great interest of the pyramid resides in the fact that, as far as is yet known, it was the first pyramid to have the walls of some of its internal chambers and passages incised with hieroglyphic texts known today as the Pyramid Texts. These cover the walls of the sarcophagus chamber (except those occupied by the palace-façade), the walls of the antechamber, those of the short corridor connecting the two, and parts of the walls of the inner end of the passage where they are lined with limestone and not granite (Part I, Chapter 5). The texts from this pyramid are in a better state of preservation than any other texts from pyramids so far explored.

South-east of the pyramid of Unis, and just south of the upper temple, there was a small pyramid enclosed in a courtyard. All that can now be seen of this pyramid is the rock-hewn ramp and chamber.

VI. PRIVATE TOMBS.

Of the large number of private tombs at North Saqqâra the following examples are selected as of special importance :

- (i) *Tjy*. The tomb and mortuary chapel are both in excellent condition. The scenes in low relief, especially those in the end room containing the statue niches and false doors, are probably the finest of any in the Old Kingdom. Among the best scenes are those showing the transport of statues, boatbuilding, metalworking, the hunting of the hippopotamus and various aspects of life in the fields. Tjy was chief of all the works of the king, director of the solar temples of Sahurê, Neferirkarê and Neuserrê, and director of the pyramids of Neferirkarê and Neuserrê.
- (ii) *Ptahhotpe and Akhethotpe*. This tomb is remarkable for several unfinished scenes showing various stages in the execution of the work. Among the best scenes are hunting, boatbuilding, gymnastics, boatmen in mock fight, catching birds, and offerings of birds. Ptahhotpe was inspector of the priests of the pyramids of Menkauhôr and Isesi, and inspector of the *wab* priests of the pyramid of Neuserrê. Akhethotpe was a high official whose relationship to Ptahhotpe is not clear. It is considered that the Ptahhotpe who wrote the well known *Instructions* was not the same as the Ptahhotpe buried in this tomb.
- (iii) *Mererukai (nicknamed Meri) Herwatykheth (his wife) and Tetimeri (their son)*. The superstructure of this composite tomb is very large, comprising over 30 rooms. The wall reliefs include scenes of boatmen sailing through the marshes; feeding of poultry; metalworking; cattle crossing a river containing a hippopotamus; the transport of statues; women dancing, and others clapping hands in rhythm. In a

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hall of six pillars is a fine life-size statue of Mererukai. A rare feature of this tomb is that the storerooms are inscribed with their names in hieroglyphs on the doorway lintels. Mererukai was a judge, vizier, and 'unique friend' in the early part of Dynasty VI.

- (iv) *Ankhhmahôr*. This is the tomb of a physician, and among the wall reliefs are illustrations of circumcision and other medical operations. This tomb also contains fine reliefs of animals crossing a crocodile-infested stream; scenes of the market place; bird scenes; the carrying of offerings and funerary furniture; and a funeral scene.
- (v) *Idut*. Originally constructed for a vizier named Ih, this was eventually the tomb of Idut who was a princess of Dynasty VI. It contains reliefs of cattle crossing a stream containing a crocodile; agricultural scenes; offerings and offering bringers; and the transport of statues.

For the benefit of those who are unable to visit Egypt, the following tombs have been removed from Saqqâra and set up in various museums:

- (vi) *Pernēb*. (Metropolitan Museum of Art, New York). This tomb was formerly situated just north of the northern enclosure wall of the Step Pyramid complex. The reliefs include offerings and offering processions, and a well-preserved offering list. Pernēb was unique friend and director of the palace.
- (vii) *Kaemremetj*. (Glyptothek Ny Carlsberg, Copenhagen). The scenes include animals crossing a stream containing a crocodile; fishermen fishing with the net; the playing of music; defaulters and scribes; boating; the manufacture of bread and beer; the making of statues; jewellers; and the bringing of offerings. Kaemremetj was a priest of the pyramid of Neuserre.
- (viii) *Neferiretnef*. (Brussels Museum). The reliefs depict the loading of donkeys; hunting and boating in the marshes; the transport of statues; scenes of butchery, etc. Neferiretnef was a high priest and chief scribe during the reign of Sahurē.



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REFERENCES

1. I am indebted to M. J-P. Lauer for unpublished information concerning this temple.
2. QUIBELL, J. E. *Saqqâra*, III, 19.
3. DRIOTON AND LAUER. *Sakkarah*, 1939, 13.
4. Compare FRAZER, SIR J. G. *The Golden Bough*.
5. See DRIOTON AND VANDIER. *Les Peuples de l'Orient Méditerranéen*, II, L'Égypte, 1938, p. 147.
6. DRIOTON AND LAUER. *Sakkarah*, 1939, 16.
7. SELIGMAN, C. G. *Egypt and Negro Africa* (Frazer lecture for 1933).
8. FIRTH AND QUIBELL. *The Step Pyramid*, I, 10.
9. DRIOTON AND LAUER. *Sakkarah*, 1939, 19.

LITERATURE

1. GENERAL

- CAPART, J. *Memphis, à l'Ombre des Pyramides*, 1930.
HERMANN, A. *Führer durch die Altertümer von Memphis und Sakkara*, Berlin, 1938.

2. INDIVIDUAL PYRAMIDS

(a) IPUT AND KHUIT

- LORET, V. *Bulletin de l'Inst. Égyptien*, 1899, p. 85.
FIRTH AND GUNN. *Teti Pyramid Cemeteries*, I, 11-14.

(b) TETI

- MASPERO, G., in *Recueil des Travaux*, v.
QUIBELL, J. E. *Saqqâra*, III, 1907-8.
FIRTH AND GUNN. *Teti Pyramid Cemeteries*.

(c) USERKAF

- FIRTH, C. M., in *Annales du Service des Antiquités*, XXIX, 64-70.

(d) DJESER

- DRIOTON AND LAUER. *Sakkarah, The Monuments of Zoser*, 1939.
FIRTH AND QUIBELL. *The Step Pyramid*, 1935.
LAUER, J-P. *La Pyramide à Dégres*, 1936-39.
Annales du Service des Antiquités, XXV-XXX, XXXIX.

(e) UNIS

- MASPERO, G., in *Recueil des Travaux*, III, 177-224, IV, 41-78.
BARSANTI AND MASPERO. *Fouilles autour de la Pyramide d'Ounas*, 1900-4.
Annales du Service des Antiquités, XXX, 186; XXXVIII, 520.

3. PRIVATE TOMBS

- MONTET, P. *Les Scènes de la Vie Privée dans les Tombeaux Égyptiens de l'ancien Empire*, 1925.
MARIETTE, A. *Les Mastabas de l'ancien Empire*, 1889.
BAIKIE, J. *Egyptian Antiquities in the Nile Valley*, 1932, pp. 168-189.

CHAPTER 5

South Saqqâra

I. THE PYRAMID, 'ENDURING IS THE BEAUTY OF PEPEY (I.)'

Although it is probable that a lower temple to this pyramid exists, none has yet been found. The line of a causeway can be traced from the desert edge to somewhere slightly short of the eastern face of the pyramid, and in this position are doubtless the remnants of the upper temple.

The pyramid consists of a dilapidated mass some 60-75 metres square and 12 metres high. The core seems to be of coarse limestone rubble, but the casing was of fine white limestone. According to Maspero,¹ some of the material of the pyramid was obtained from the surrounding mastaba-tombs. The interior features are not at present accessible. It was in this pyramid that Maspero made the epoch-making discovery of the Pyramid Texts—the first pyramid in which they were found.

The internal arrangements are almost identical with those of the pyramid of Pepy II (which see).

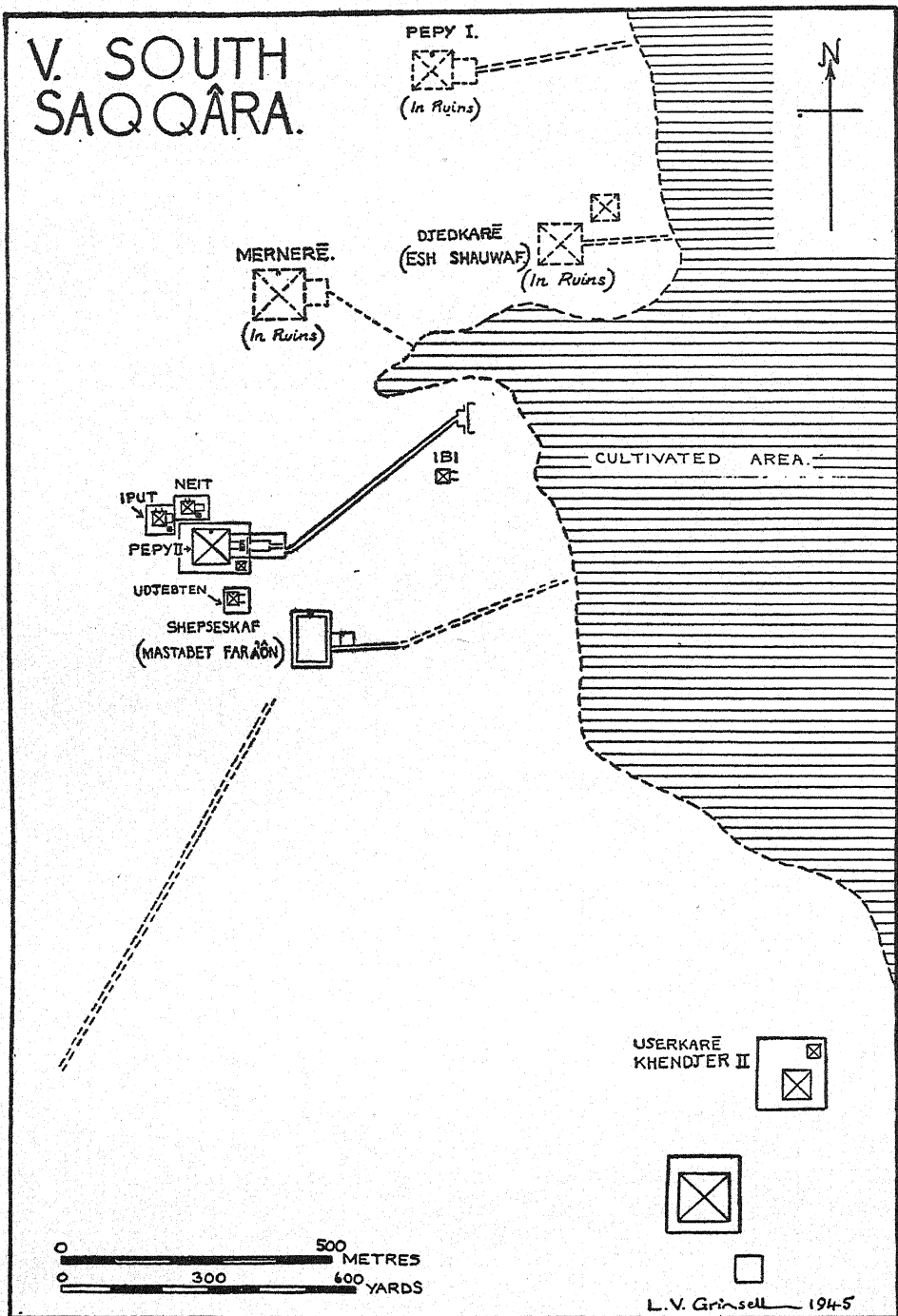
The sarcophagus chamber, which had a pointed roof, contained near the western end a black basalt sarcophagus which had been mutilated by plunderers, and at the south-east end a granite canopic box in which the remains of 3 of the 4 alabaster vases were found.

II. THE PYRAMID, 'DJEDKARĒ (ISESI ?) IS BEAUTIFUL.'

Excavations now in progress (November 1945) are revealing the remains of the lower temple, some of the walls of which were decorated in low relief. From this point the causeway extends for about 67 metres westwards to the upper temple, now being excavated by Prof. Alexandre Varille.² Inscriptions on the stones have already resulted in the identification of the owner of the pyramid as DjedkarĒ (Isesti ?), who preceded Unis towards the end of Dynasty V. The mass of rubble which originally comprised the pyramid is some 75-80 metres square and 24 metres high, and it is apparently composed chiefly of rough blocks of coarse limestone but the casing (now invisible) was doubtless of fine white limestone.

About 30 metres north-east of this pyramid is a small and ruined limestone pyramid, about 42 metres square and 8 metres high.

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III. THE PYRAMID, 'MERNERÊ SHINES AND IS BEAUTIFUL.'

From the wadi south-west of the pyramid of Djedkarê, a causeway extends west-north-west towards the ruined pyramid of Mernerê. The lower and upper temples have not yet been explored.

The pyramid is perhaps the most ruined of all and scarcely worth visiting, and its interior is blocked. It was originally 90-95 metres square. It was explored in 1881 by Maspero who found its general structure and internal passages and chambers similar to those of Pepy I and II, Teti and Unis. The walls of the sarcophagus chamber were incised with the Pyramid Texts. In this chamber was a black granite sarcophagus which contained a mummy, (perhaps an alien interment and not that of Mernerê).

The granite of the sarcophagus came from Ibhet near Aswân. The remarkable inscription of Uni contains some interesting references to the bringing of stone from Upper Egypt for the construction of this pyramid (see Part I, Chapter 4, sections I (a), and II (a), (b) and (d)).

IV. THE PYRAMID 'PEPY (II) REMAINS LIVING,' AND SURROUNDINGS.

(a) *The Pyramid of Pepy II.*

The approach to the pyramid of Pepy II is from a fine lower temple on the desert edge, consisting of two ramps leading up to a platform which originally formed the floor for a superstructure which has now disappeared. This superstructure included a portico of eight pillars. A passage from this portico led westwards through two rooms to the causeway, which extends west-south-west for about 400 metres to the upper temple.

The entrance to the upper temple is near the centre of the east side, and leads past three small rooms to a corridor west of which is the central court. North and south of the corridor and central court are groups of storerooms. The central court is paved with white limestone and was surrounded by 18 pillars of which one of quartzite is still standing.

The outer section of the temple is divided from the inner by the temenos wall of the pyramid.

A short passage and stairway lead from the central court to five statue niches in the inner section. A passage from the south end of these niches leads to groups of four and five storerooms, two antechambers (one of which has been reconstructed and contained a column and a statuette of Pepy II when a boy) and the offering shrine. The false door and offering table have long disappeared from the offering shrine. North of the statue niches and offering shrine are more storerooms, and further north is a courtyard containing three rectangular limestone basins.

The walls of this temple were decorated with reliefs, of which the surviving fragments showed the king vanquishing his enemies, the king hunting, the ceremonial erection of a mast, the king acclaimed by

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the vulture and serpent goddesses of Upper and Lower Egypt, and offering bringers and lists of offerings. The reliefs from one of the anterooms have been re-set in their original positions by the late M. G. Jéquier. This room contains a few of the statues of bound prisoners, of which a considerable number were found in the temple.

There was also a small offering shrine on the north side of the pyramid, but of this there is little or nothing to be seen.

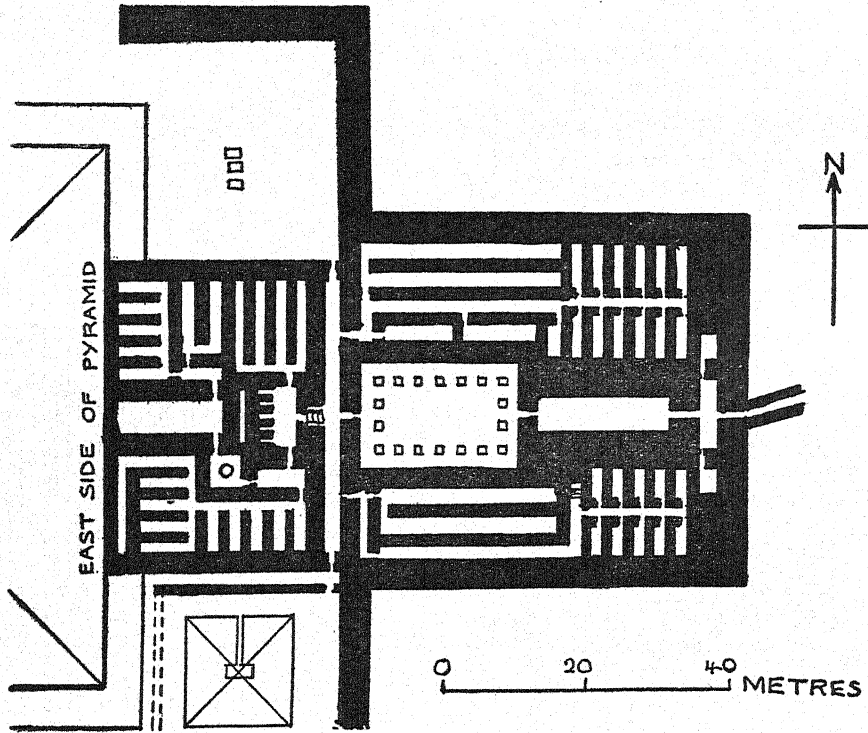


FIG. 20. UPPER TEMPLE OF PEPPY II (*after Jéquier.*)

The pyramid contains Pyramid Texts and is accessible, and it is therefore among the most interesting and important of all. It was originally 78 metres square and 52 metres high and some of the casing stones still in place east of the entrance show that the pyramid had a slope-angle of about 53° . The exterior, as usual in pyramids of Dynasties V and VI, is somewhat ruined. The pyramid is built of coarse local limestone, and the casing was of larger blocks of fine white limestone.

The entrance, on the ground-level in the approximate centre of the north side, leads to a ramp which slopes downwards at 25° for a

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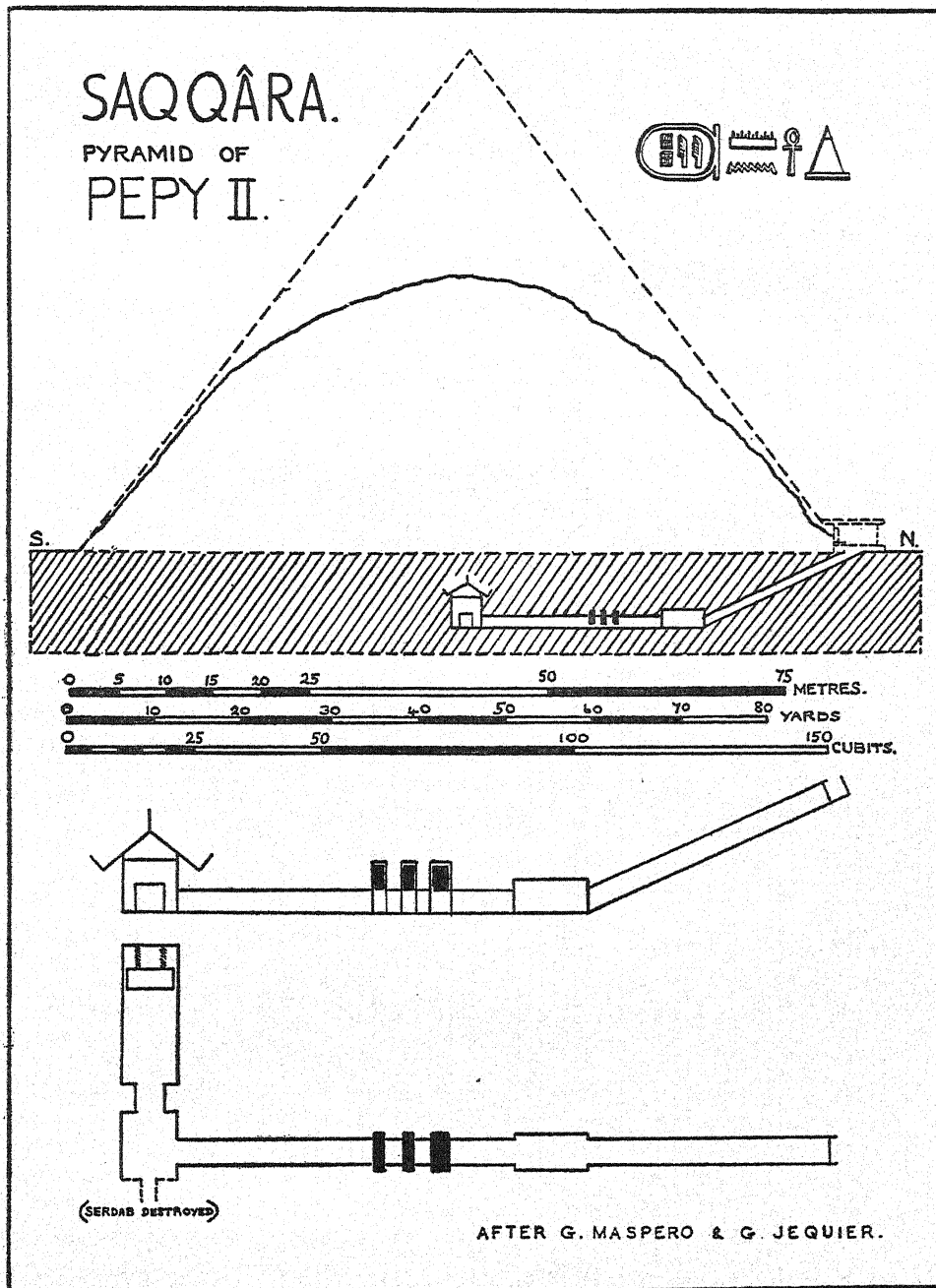


FIG. 21

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distance of 16 metres, where it reaches the vestibule. About half way down the ramp is a granite fitting for a blocking-stone which has fallen out of position. The vestibule, which is slightly higher and wider than the ramp and passage, has its flat ceiling decorated with stars, and its walls incised with Pyramid Texts. This vestibule contained broken vases of alabaster and diorite which probably contained perfumes, and among the débris was also a gold instrument perhaps used in the ceremony of the Opening of the Mouth.

After the vestibule comes the horizontal passage, which passes three granite vertical portcullis-slabs before reaching the antechamber at a distance of 23 metres from the bottom of the ramp. All the limestone walls of the passage are covered with Pyramid Texts.

At the end of the horizontal passage is the antechamber, which has a pointed roof ornamented with white stars on a blue background, and the walls are covered with Pyramid Texts in a rather decayed condition. The serdab, east of the antechamber, was ruined by robbers and is inaccessible.

West of the antechamber is the usual short corridor leading to the magnificent sarcophagus chamber, which has a pointed roof ornamented with stars. Near the west end of this chamber is the sarcophagus of polished black granite, on the east side of which is a hieroglyphic inscription which may be translated :

‘Living Horus, divinely appearing, King of Upper and Lower Egypt, Neferkarē, the Two Ladies divinely appearing, Neferkarē, powerful Horus of gold, Pepy, son of Rē, heir of Geb, born of Nut, Living for ever.’

The inner sides of the sarcophagus contain hollowed channels for the ropes which lowered the coffin. Nearby is the lid of the canopic chest. The walls surrounding the sarcophagus are decorated with a fine stela-façade. The rest of the walls of the sarcophagus chamber are covered with Pyramid Texts in fairly good condition.

(b) *Subsidiary Pyramids.*

Near the south-east corner of the pyramid of Pepy II, south of the inner section of the upper temple, is a small pyramid, with an entrance at the centre of the north side, leading by a ramp and passage to a central chamber.

There is another small pyramid between those of Neit and Pepy II. This is a neatly formed example, only 5 metres square and at present 2.50 metres high. The top is removed, exposing the core of small coarse limestone rubble. Most of the fine limestone casing-blocks are still in place, and show a slope angle of about 60°. The entrance begins a short distance outside the north face of the pyramid, and is walled with two small limestone blocks on each side. The passage is blocked by a slab of limestone, but appears to descend at about 25°. It is an almost perfect example of miniature pyramid. The central

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chamber contained no sign of any interment and no sarcophagus, but was full of broken pottery. Between this pyramid and that of Neit were found 16 wooden barques (Part I, Chapter 2).

A few metres east of the Pyramid of Pepy II, and north of that of Udjebten, is another small pyramid about 15.50 metres (30 cubits) square and at present about 3 metres high, with a slope-angle of 52° – 55° . The composition is the usual core of small blocks of coarse limestone, and casing of larger blocks of fine white limestone. The passage is accessible and is about 60–70 cm. wide and 9 metres long. It slopes at 25° – 30° to a central chamber 4 metres by 2 metres, which is open to the sky.

(c) *The Pyramids of the Queens of Pepy II.*

The Pyramid of Neit, one of Pepy II's queens, has on the east side the remains of a small temple, the most interesting feature of which is the restored entrance hall with wall reliefs of lions.

The pyramid is 21 metres square and at present about 4 metres high, the slope angle of the casing being about 60° . A good deal of the fine white limestone casing is still in place, especially around the entrance.

The entrance is in the centre of the north side, and is accessible. It leads to the usual downward ramp sloping at about 25° for a distance of 8 metres, after which it meets the vestibule which is 2 metres long. At the end of the vestibule is a granite vertical portcullis-slab, part of which is still in position, but an opening through it gives access to the antechamber.

The antechamber, which has its walls covered with Pyramid Texts, leads straight into the sarcophagus chamber which has a flat ceiling ornamented with stars. The walls are covered with Pyramid Texts, the engraving of which however falls short of the craftsmanship displayed in the pyramids of Unis and Pepy II. The stars on the ceiling are likewise poorly executed.

At the west end is the granite sarcophagus, south-east of which is a canopic box of granite, with a hollow in the base for each of the four canopic jars. On the wall behind the sarcophagus is, or was, a delicately designed palace-façade.

The Pyramid of Iput, another of Pepy II's queens, is situated immediately west of that of Neit. It has the ruins of a small temple on the east, of which the fine red granite doorway is still standing, and the limestone false door (much decayed) is still in position. The pyramid was about 22 metres square and 16 or 17 metres high originally with a slope angle of about 55° . It was composed of a core of rough small limestone blocks, and a casing of large blocks of fine white limestone. The entrance, which was slightly outside the centre of the north face, led down a short ramp into the sarcophagus chamber, the walls of which were covered with Pyramid Texts (now damaged).

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The Pyramid of Udjebten, is situated west-north-west of the Mastabet Fara'ôn, and south-east of the pyramid of Pepy II. It has a temple on the east side, where there is a fine offering-table of alabaster still in position, bearing the following hieroglyphic inscription: 'a coming-forth-at-the-voice-offering of bread, drink, and cake for the royal wife of Neferkarê, given enduring life, his beloved, favoured by all the gods, Udjebten.' This inscription is written to be read by the spirit of the recipient of the offerings.

The pyramid, which is in a ruined condition, was originally about 24 metres square and 25.50 metres high, and had a steep angle of slope of about 65°. The core consisted of small blocks of coarse limestone, and the casing (now almost entirely destroyed) of fine white limestone.

The entrance, in the approximate centre of the north face, consists of a large doorway of slabs of basalt. From this there extends a passage about 10 metres long which leads to the sarcophagus chamber, the walls of which were originally covered with Pyramid Texts, now almost entirely destroyed. The ceiling of the sarcophagus chamber seems to have been flat and covered with stars.

(d) *Private Tombs of the End of Dynasty VI.*

East of the pyramid of Pepy II are some private tombs of a type peculiar to the end of Dynasty VI. Their substructure consists of a tomb chamber about $3\frac{1}{2}$ metres by 2 metres by $2\frac{1}{2}$ metres high, at the bottom of a shaft. This tomb chamber is beautifully decorated with offering formulae, offering lists, false doors, and representations of the most important of the articles offered. Each seems to have contained a coffin and canopic box of wood, and in some of them were found the earliest known models of slaves at various occupations, as well as models of offerings of meat and poultry. Their superstructure consists of a small cubical or rectangular structure of mud-brick containing a false door and offering slab, the whole representing a house for the dead. They do not contain any wall reliefs, such as were common in the tombs of Dynasties IV, V and early VI, perhaps largely on account of forebodings of the imminent collapse of the Memphite Kingdom at the end of Dynasty VI.

The best example is the tomb of Shy, accessible by a wooden ladder. In addition to the usual offering formulae, false doors, offerings and offering lists, it contains an excellent representation of a granary. This tomb is in a superb condition. In the vicinity are several other similar tombs in a more or less damaged condition.

A perfect example of one of these tomb chambers is that of Desheri in the Egyptian Museum at Cairo (No. 48, on the ground floor left of the entrance).

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V. THE PYRAMID OF IBI.

This pyramid is situated about 380 metres east-north-east of the Mastabet Fara'ôn, and south of the causeway of the pyramid of Pepy II. It belonged to an obscure king of the beginning of Dynasty VII. There were signs of a small (? temporary) funerary chapel having existed on the east side.

The pyramid consists of the usual core of coarse small limestone blocks, 21 metres square, which was faced with casing slabs probably of fine white limestone bringing the base length to 31.50 metres. As none of the casing remained, the height and slope-angle cannot be determined. Instead of consisting of a series of accretions, the core appears to have been in one mass, but faced with a double wall of fine white limestone 5 metres thick, of which however only the foundations remained.

From the approximate centre of the north side the entrance (accessible) leads to a ramp at 25° sloping downwards for 14 metres to the sarcophagus chamber, both ramp and chamber being lined with fine white limestone. East of the sarcophagus chamber was the usual serdab. The absence of vestibule, horizontal passage, and antechamber recalls the normal plan of queens' pyramids of Dynasty VI.

The sarcophagus chamber appears to have had a flat roof of which no trace is left. The walls are covered with Pyramid Texts in vertical columns, crudely incised and not inlaid with any colouring matter. The walls facing the head and foot of the sarcophagus are ornamented with a palace-façade decoration. At the west end of the sarcophagus chamber is a slab of granite, evidently part (the lid ?) of the sarcophagus.

VI. THE TOMB 'PURE IS SHEPSESKEF' (?)

Although not a pyramid, being rectangular and nearly flat-topped, this tomb-complex has many of the characteristics of those of pyramids, and a short description is not out of place in this work.

No trace of any lower temple has yet been brought to light but it is probably buried in sand. From the desert edge there extends a causeway some 760 metres in length and 1.70 metres wide, excluding the brick wall on either side. It was originally roofed over, the roof being less than three metres above the ground. Some distance before reaching the upper temple the causeway changes its course from ENE/WSW to E/W.

The upper temple was smaller than usual in Dynasty IV. Some of the walls are still visible; their lower parts were of granite, and the upper parts of fine white limestone. To the east was an open court walled with mud brick.

The actual tomb-structure is rectangular, being 99.60 metres long and 74.40 metres wide, the long axis being north-south. The height was about 20 metres. It is composed of large blocks of the local coarse limestone arranged in a manner that at present gives the impression of two accretion-walls. The rectangular plan and the shape of the top of the structure show that it was built in the shape of an Old Kingdom sarcophagus, the top being slightly rounded and having a bevelled headpiece and footpiece (see Part I, Chapter 3, Section IV).

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On the north face of the structure was an inscription describing repairs done by Khamuas, a son of Ramesses II.

The entrance (accessible) is in the centre of the north side, and leads to a ramp descending at 23° for some 20 metres to a vestibule which is higher and wider than the ramp. This leads to a horizontal passage with three vertical granite portcullis slabs. The distance between the bottom of the ramp and the antechamber at the end of the horizontal passage is about 20 metres.

The antechamber is about 8 metres long, 3 metres wide, and nearly 5 metres high, and has a pointed roof. South of the antechamber is a passage leading to 6 small recesses, similar to those in the tomb of queen Khentkawes and in the pyramid of Mycerinus.

From the antechamber a short narrow corridor leads westwards to the sarcophagus chamber, which is about 7.50 metres long, 4 metres wide, and nearly 5 metres high. It has a fine roof of granite slabs placed end to end and hollowed out on their undersides producing a false arch similar to that of the sarcophagus chamber of Mycerinus. At the west end was the black basalt sarcophagus.

Near the base of the walls of the antechamber and sarcophagus chamber are lines and hieroglyphic inscriptions in red, which appear to be the architect's directions to the builders in regard to laying the floor slabs.

Enclosing the tomb-structure are two rectangular temenos walls.

VII. THE PYRAMID OF KHENDJER II, AND SURROUNDINGS.

About 1 kilometre south-east of the Mastabet Fara'ôn are three pyramids of which the northernmost is that of Khendjer II, Dynasty XIII. This pyramid has a temple on the east and an offering shrine on the north.

Among the remains of the offering shrine on the north side were a beautiful statuette of Khendjer II, parts of a false door, and fragments of a polished granite pyramidion inscribed with decorations and texts in hieroglyphs. Near the apex of all four faces of the pyramidion was the solar disc Behudet lowering its wings as if to protect the deceased king, and suspended from each solar disc were two ankh-signs. The barques of the rising and setting sun were depicted on the east side.

At the north-east corner of the pyramid was a foundation deposit of four coarse earthenware pots.

The superstructure is now destroyed, but was originally 55 metres square, and about 37.35 metres high, with a slope-angle of about 55° . The main body of the pyramid was of mud-brick and the casing was of fine white limestone. Nearly all the casing was removed during the reign of Ramesses II by one Nashui, who left a hieroglyphic inscription in the temple commemorating the fact. Two casing slabs (not *in situ*) may be seen on the west side of the pyramid at the time of writing (1946).

The entrance (now blocked) was at the west, and was walled and roofed with fine white limestone. The descent was not by a ramp but by two flights of steps, the outer flight being of 14, and the inner of 39. At the end of each

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flight of steps was a transverse quartzite portcullis-slab. At the end of the second stairway was a rather elaborate arrangement of passages and chambers. The sarcophagus chamber, which was nearly central, consisted of a vast hewn-out block of quartzite weighing about 60 tons, covered by two flat slabs above which was a pointed roof.

The pyramid was enclosed by two temenos walls; the outer was of mud-brick and about 125 metres square, and the inner was of fine white limestone and about 75 metres square.

SMALL PYRAMID N.E. OF PYRAMID OF KHENDJER II.

Between the inner and outer temenos walls of the pyramid of Khendjer II, and at the north-east corner thereof, are the remains of a small pyramid about 25 metres square, the core of which was of mud-brick and the casing of fine white limestone. Of the core only 4 or 5 courses remained, and of the casing not more than a stone or two were left, when the site was explored by Jéquier in 1929-1931.

The entrance to this pyramid was in the centre of the east side, and the floor, walls, and roof-slabs are of fine limestone. The entrance, which is still visible but is blocked with sand, leads into a passage about 15 metres long, the first part of which consists of a flight of 21 steps at 33°. At the bottom of this, on two different horizontal levels, are two massive quartzite portcullis-slabs.

The passage ends in an antechamber. On the north of this is a corridor which leads to a chamber filled with a quartzite sarcophagus the lid of which was supported on 5 columns of masonry, showing that it had never been occupied. East of this was a canopic chest of quartzite. A corridor south of the antechamber led to a similar chamber filled with a quartzite sarcophagus, the lid of which was supported on 6 columns of masonry, indicating that this sarcophagus also had never been occupied. South of this was a canopic chest of quartzite similar to that near the sarcophagus in the northern chamber.

No remains of any temple were found connected with this pyramid.

There can be little or no doubt that this pyramid was built for two people neither of whom was buried in it, and these may have been queens of Khendjer II. The political upheavals of the times may have been the cause of the burial of these personages elsewhere.

UNFINISHED PYRAMID SOUTH-WEST OF THE PYRAMID OF KHENDJER II.

Immediately south-west of the pyramid of Khendjer II is a very fine, although unfinished, pyramid, now ruined, but the internal passages and chambers are accessible and of great interest.

There appear to be no clear traces of any lower temple, causeway, or upper temple, but it is probable that the latter existed.

The pyramid is about 95 metres square, but at present only about 3 metres high. It was of brick, surrounded by the foundations of a casing probably of fine white limestone.

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SAQQÂRA PYRAMID OF UNKNOWN KING OF DYNASTY XIII.

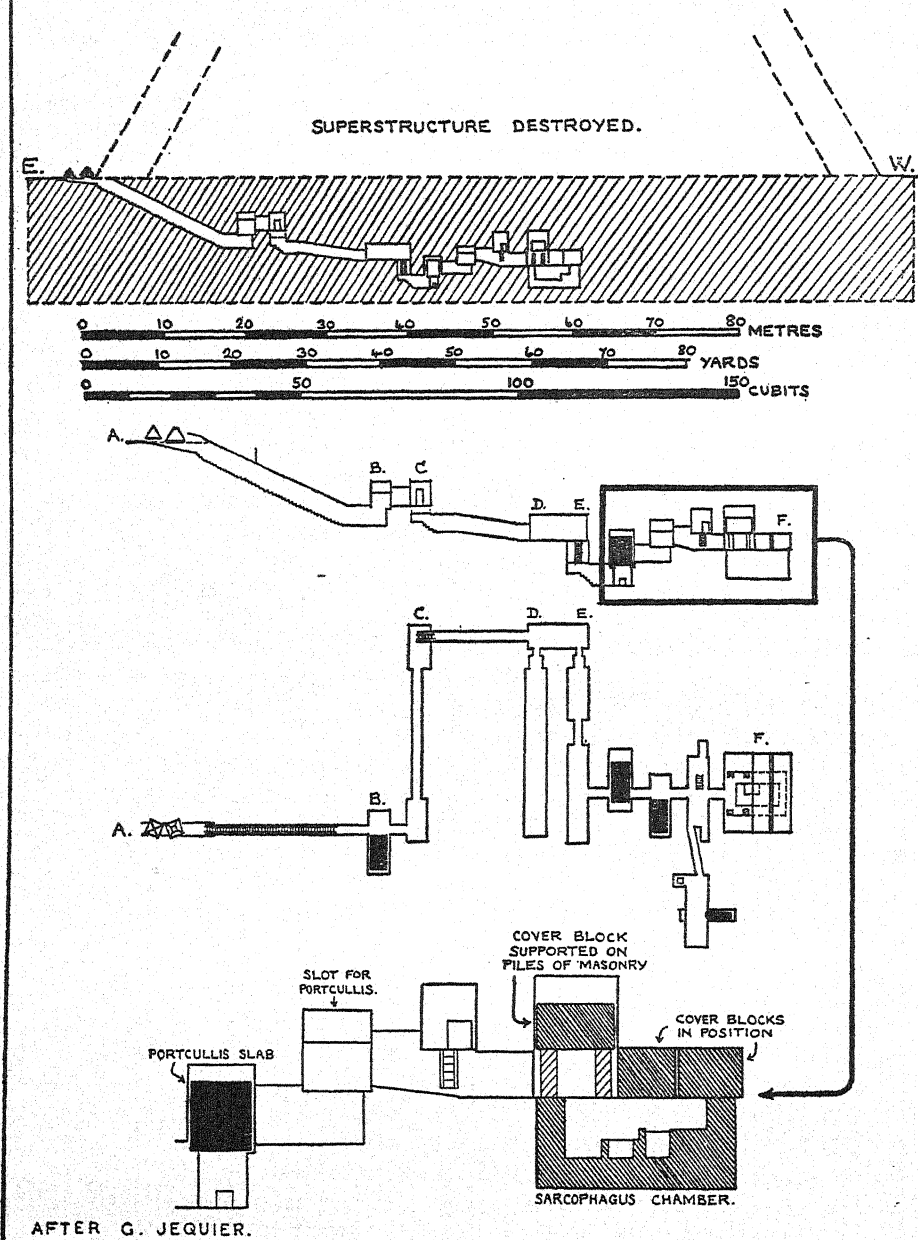


FIG. 22

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At the angles of the pyramid, in the layer of stone which formed the base of the casing, were foundation-deposits which included rough earthenware conical jars, and in the north-west corner were some models of copper and bronze implements.

Outside the entrance, which is in the east face, were two black granite pyramidia, unfinished and uninscribed, which are now in the Egyptian Museum at Cairo.

The arrangement of the interior is very complicated. The entrance on the east side leads to a flight of 44 steps at the bottom of which is a transverse portcullis-slab of quartzite. Then comes a vestibule, and then the passage makes a right-angled turn to the south and continues for about 12 metres, at the end of which is another vestibule and a flight of 5 steps leading to a right-angled turn to the west. Further passages and stairways finally lead to two more transverse quartzite portcullis-slabs, and then to two antechambers and two sarcophagus chambers. The larger sarcophagus chamber (that of the king ?) has a pointed roof with a small arch above the apex. It contained a quartzite sarcophagus with the lid supported on four piles, showing that it had never been used for the interment for which it was constructed. The smaller (queen's ?) sarcophagus chamber likewise had a pointed roof, and contained a quartzite sarcophagus which appears never to have been used.

Several of the walls of the passage and chambers of this pyramid have a series of dabs of paint arranged in vertical parallels 10-15 cm. apart, the meaning of which is not evident. (Plate XII.)

Surrounding the pyramid was a 'wavy wall' type of temenos wall, constructed of mud-brick. This type of wall appears to have been in use in the Middle Kingdom only, and the present example is the best that has yet come to light.

This is the finest extant example of a Middle Kingdom pyramid, so far as the internal structure is concerned, and it is only about one kilometre south-east of the Mastabet Fara'ôn. The key is kept by an Antiquities' Department watchman nearby. The ramps, passages, and chambers nearly all have ceilings over 2 metres from the floors and one can walk freely along them.

EGYPTIAN PYRAMIDS

REFERENCES

1. *Recueil des Travaux*. Vol. v, pp. 157, 158.
2. I am indebted to Prof. Varille for providing me with the latest information from his excavation of this site.

LITERATURE

1. GENERAL

- JÉQUIER, G. *Douze Ans de Fouilles dans la Nécropole Memphite*, Neuchâtel, 1940.
CAPART, J. *Memphis, à l'Ombre des Pyramides*, 1930.
HERMANN, DR A. *Führer durch die Altertümer von Memphis und Sakkara*, Berlin, 1938.

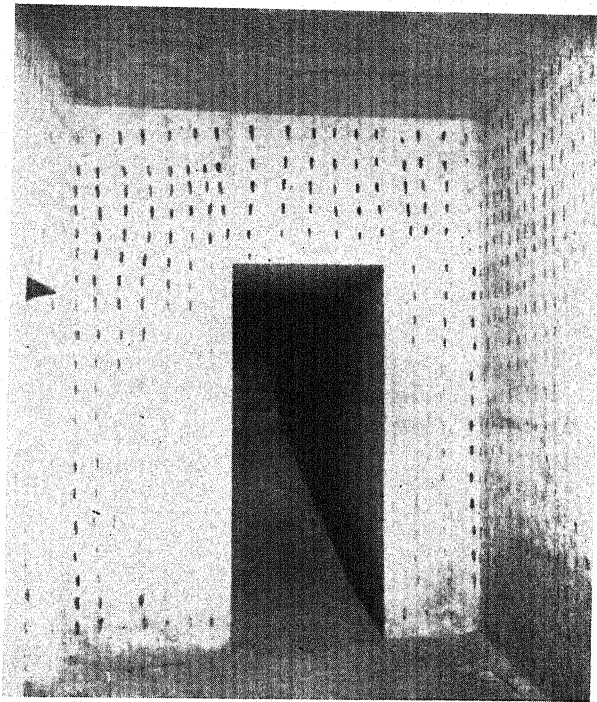
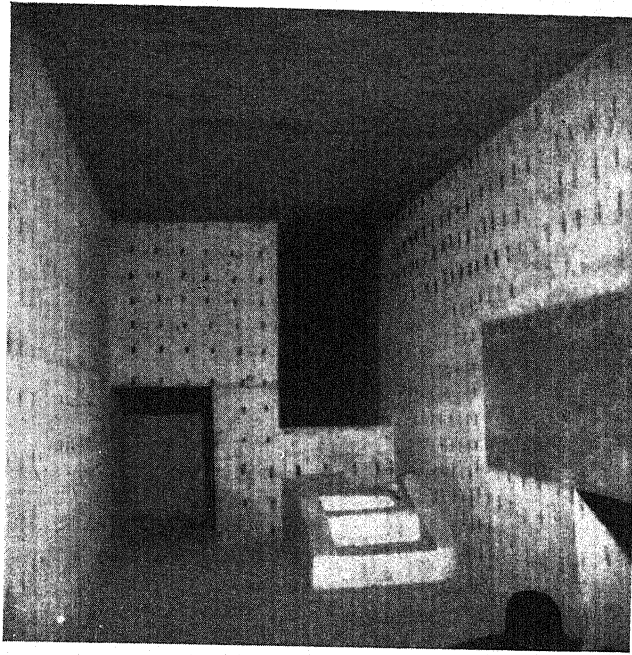
2. PARTICULAR TOMBS

- (a) PEPY I
MASPERO, in *Recueil des Travaux*, v.
BIRCH, in *Proc. Soc. Bibl. Arch.*, III, 111-116.
- (b) DJEDKARĒ (ISESI ?) (ESH SHAUWAF)
VYSE. *Gizeh*, III, 51. Report of recent excavation not yet published.
- (c) MERNERĒ
MASPERO, in *Recueil des Travaux*, IX.
- (d) PEPY II
MASPERO, in *Recueil des Travaux*, XII.
JÉQUIER, G. *Le Mon. Funéraire de Pepi II*, 1936-40.
- (e) NEIT, IPUT AND UDJEPTEN
JÉQUIER, G. *Les Pyramides des Reines Neit et Apouit*, 1933.
JÉQUIER, G. *La Pyramide d'Oudjebten*, 1928.
- (f) IBI
JÉQUIER, G. *La Pyramide d'Aba*, 1935.
- (g) SHEPSESKAF (MASTABET FARA'ON).
JÉQUIER, G. *Le Mastabet Fara'on*, 1928.
- (h) KHENDJER II AND NEIGHBOURING PYRAMIDS
JÉQUIER, G. *Deux Pyramides du Moyen Empire*, 1933.

3. PRIVATE TOMBS

- JÉQUIER, G. *Les Tombeaux des Particuliers contemporains de Pepi II*, Cairo, 1929.

PLATE XII

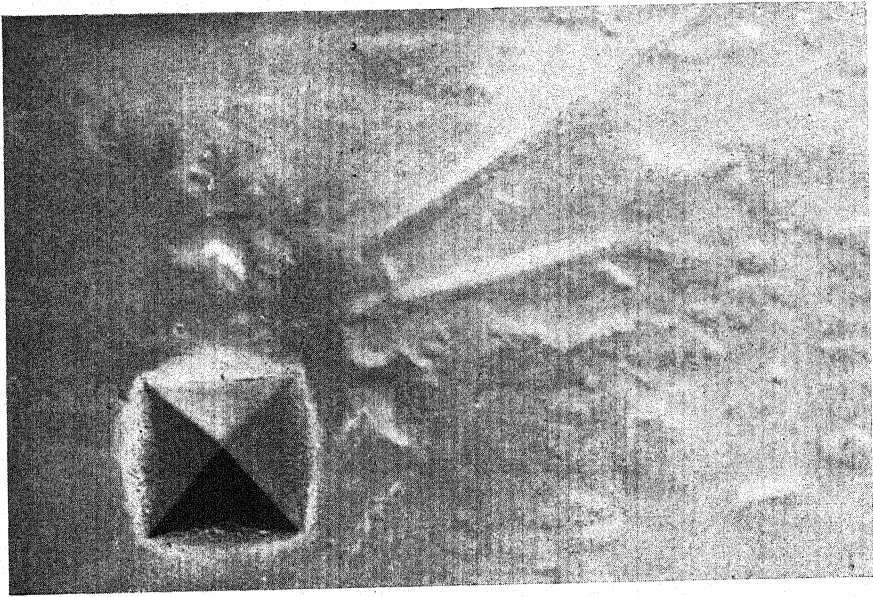


SAQQÂRA : Interior of Pyramid of Dynasty XIII

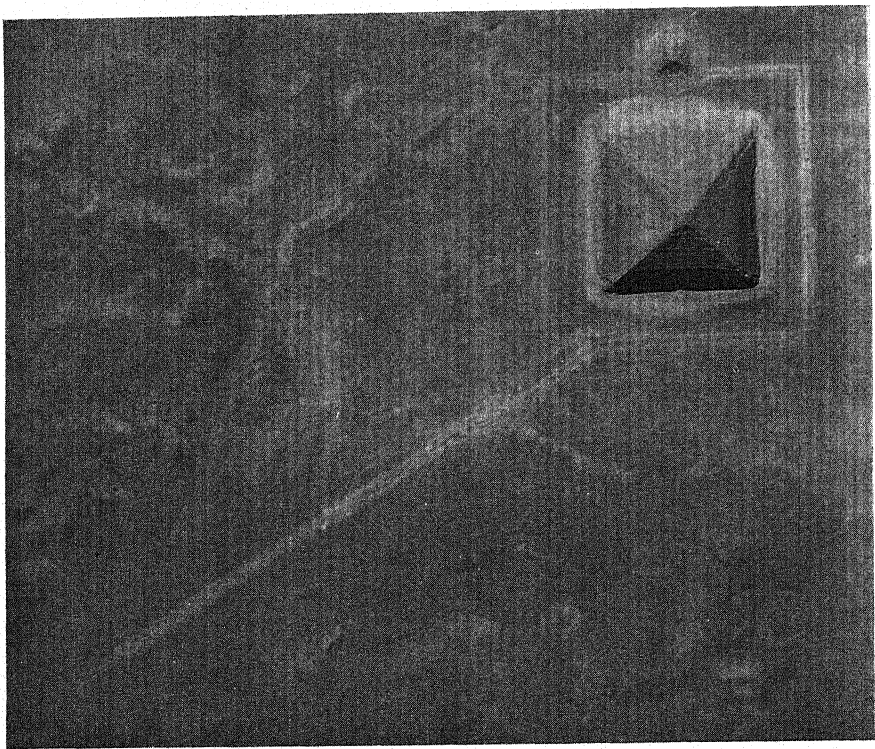
Photos : C. Reid

facing p. 156

PLATE XIII



(a) DAHSHÛR: NORTH STONE PYRAMID. Vertical Air-photograph



(b) DAHSHÛR: PYRAMID OF SNEFRU. Vertical Air-photograph

Both R.A.F. Official

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facing p. 157*

CHAPTER 6

Dahshûr

WHEN J. de Morgan went to Dahshûr in 1893 for the purpose of excavating the brick pyramids (of which there are three), he began by building himself a house east of the pyramid of Sesostris III, using the Dynasty XII bricks already loose or fallen from that structure¹. In and around this house are now (1945) a few objects of antiquity found during the excavations. They include a statue, some blocks of limestone with hieroglyphs and reliefs, as well as portions of bowls of alabaster and other stones, probably from the temple of the pyramid.

I. THE PYRAMID, 'SESOSTRIS (III) IS AT PEACE.'

No remains of a lower temple to the pyramid of Sesostris III have yet been found. There are traces of a causeway leading from the south-east to the north-west, where it joins the east side of the temenos-wall at a point south of the remains of the upper temple. The latter, which is east of the pyramid, is completely ruined. Fragments of sculptured blocks, and blocks bearing the names of Sesostris III, were found on the site of the temple by Perring² and de Morgan³.

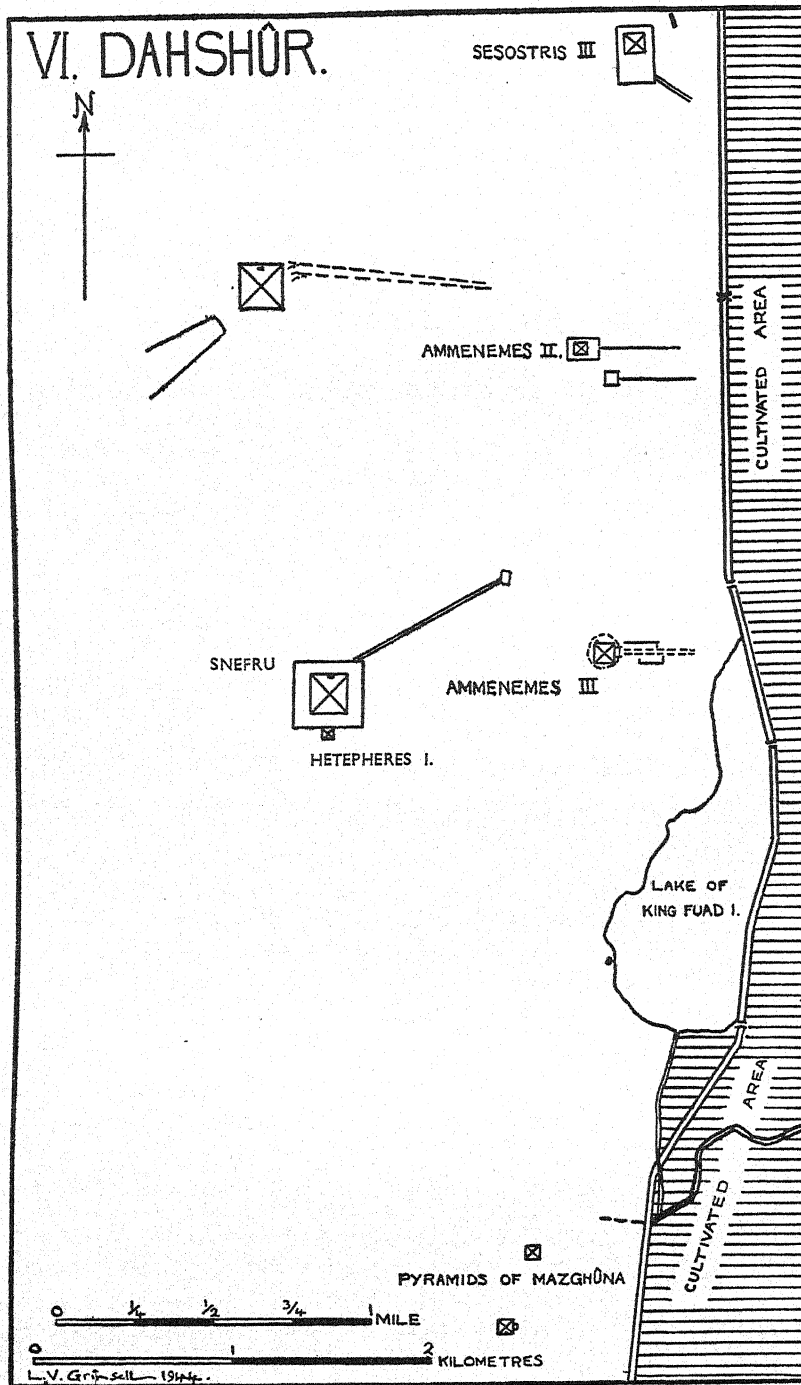
The pyramid was originally 104.90 metres square and 77.76 metres high, with a slope-angle of 56°. The manner of casing the brick core with finely jointed limestone blocks is of some interest. The mud-brick walling was finished off in a series of narrow steps or platforms, each wide enough to take a limestone block. The limestone blocks were then added and fitted together with dovetail cramps. Some of the jointed blocks are to be seen east of the pyramid but not *in situ*. According to Vyse and Perring,⁴ the whole pyramid was built on a prepared surface of fine sand with which the ground was levelled.

The entrance was on the west side. The passage and sarcophagus chamber are not now accessible, but they were found by de Morgan. The sarcophagus chamber was constructed of enormous blocks of Aswân granite, and contained a roof pointed on the outside but arched on the inside. At the western end was a magnificent sarcophagus of red granite, decorated with vertical panelling.

In a gallery near the north-east corner of the pyramid was found the famous hoard of jewellery of Dynasty XII, now in the Egyptian Museum at Cairo.

The pyramid stands in the approximate centre of an enclosure bounded by a temenos-wall of mud-brick. Between the north face of the pyramid and the

EGYPTIAN PYRAMIDS



north side of the temenos-wall are four rectangular mastaba-tombs, probably of princesses. Immediately south of the south side of the temenos-wall, and near the west end thereof, de Morgan found three wooden barques and traces of three others (see Part I, Chap. 2).

II. THE NORTH STONE PYRAMID.

This fine pyramid is approached from the remnants of a lower temple 65 metres by 100 metres near the desert edge. The lower temple is connected by a causeway with an upper temple of which little or nothing can now be seen.

This tomb has been described as the first true pyramid, and the forerunner of that of Kheops which it closely resembles in both size and general appearance. It is about 220 metres square and 99 metres high, having a slope-angle of about $43^{\circ} 40'$, which is a good deal less than that of any other pyramids. The core is of the local coarse limestone. The casing was of fine white limestone, and parts of it were visible, especially on the west side, in Vyse's time (1837)⁵ but none were seen by the present writer and it is probable that they are either covered with sand or else removed.

The entrance is on the north side and 28 metres above the base, and it is 4 metres east of the centre of the north side. It is walled and roofed with blocks of fine white limestone. This leads to a ramp which slopes at $27^{\circ} 56'$ downwards for about 60 metres to a horizontal passage. It is possible to descend to the bottom of the ramp, but increasing quantities of limestone rubble and other debris prevent further penetration for all but the most agile. The passage extends beyond the bottom of the ramp on a horizontal plane for 7 metres and is 1 metre wide and 1.20 metres high. This leads to three chambers, all of which have fine corbelled roofs. According to Vyse and Perring, no granite was used at this pyramid.⁶

A feature of special interest, clearly seen on the air-photograph (plate XIIIa), is the existence of two causeways, each several hundred feet long, leading from the pyramid south-westwards to some uneven ground from which it is probable that much of the local limestone was obtained for building the pyramid.

Although it is at present unknown for whom this pyramid was built, the structure of the interior, especially the corbelled roofs and the arrangement of the antechambers, shows it to have been built near the end of Dynasty III.

III. SUPPOSED REMAINS OF PYRAMID, 'DIVINE ARE THE PLACES OF MENKAUHÛR.'

A short distance east of the North Stone Pyramid are the supposed remains of a pyramid, attributed by Borchardt to Menkauhôr on the evidence of a passage in the Dahshûr charter.⁷

IV. THE PYRAMID 'SCEPTRE OF AMMENEMES (II).'

No lower temple to the pyramid of Ammenemes II has yet been found. There is a causeway extending from the desert edge for a distance of about 800 metres westwards to the upper temple. Among the ruins of the latter were fragments of stone bearing the titles of Ammenemes II, from which it was inferred that the pyramid belonged to that monarch.

EGYPTIAN PYRAMIDS

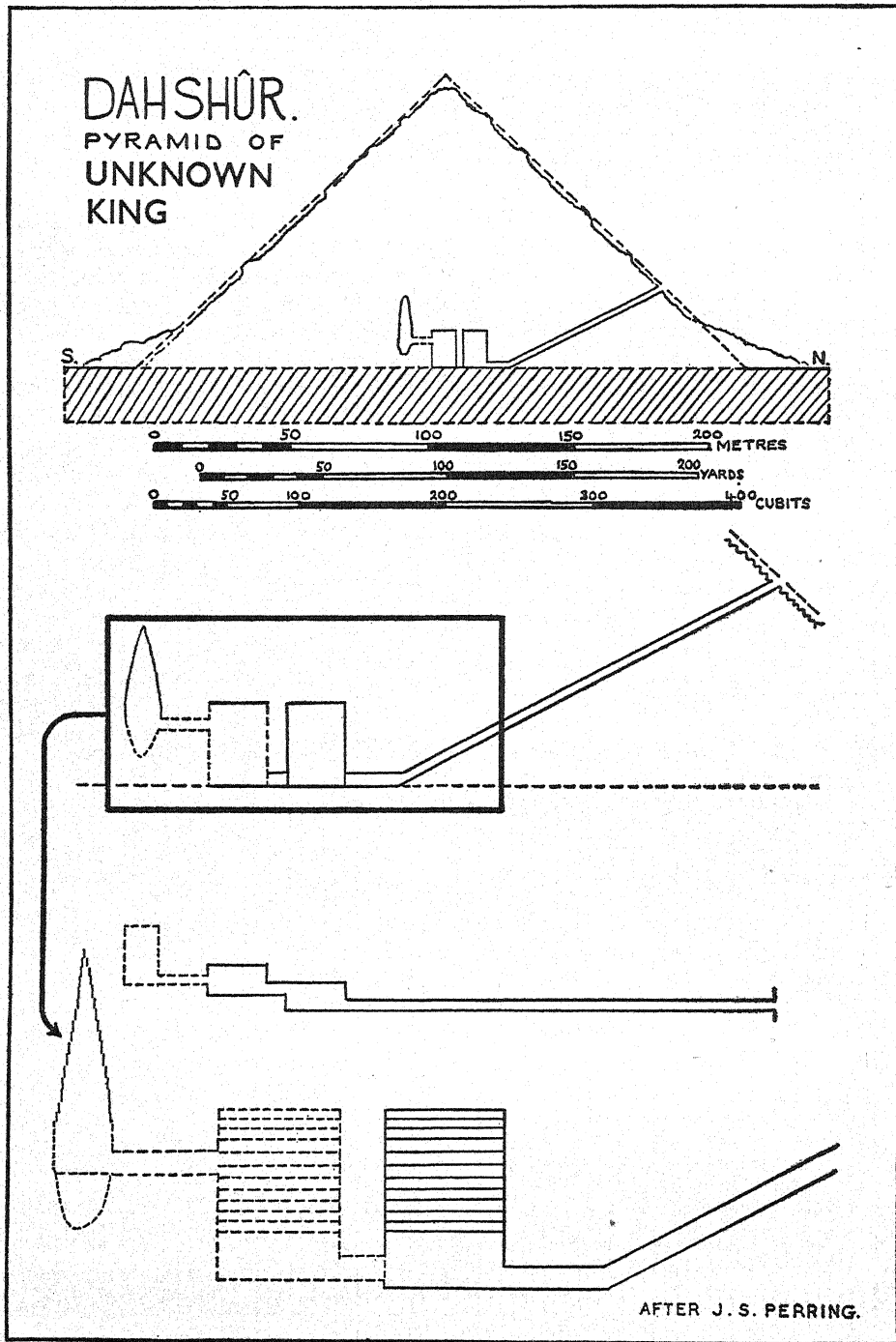


FIG. 23

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The pyramid is so ruined that its dimensions cannot be given precisely, but it was probably 40-50 metres square. As no casing slabs were found, the height and slope-angle of the pyramid have not been calculated. It was opened by de Morgan in 1894-5, who found the structure to resemble that of the pyramid of Lahun, in that the square base was divided into eight triangles by walls of fine white limestone, arranged at right angles and diagonally in the square base. The triangular interstices were filled with sand. Many of the limestone blocks had quarry-marks.

The entrance (inaccessible) was in the north side, and led to a ramp which extended downwards to a horizontal passage which contained two granite portcullis slabs, one vertical and the other transverse. Beyond the horizontal passage was the sarcophagus chamber, at the west end of which was a sarcophagus of sandstone sunk into the floor. The ceiling of this chamber was flat but surmounted by a pointed roof.

North-west of this site are some mastabas of Dynasty III, and immediately west are the tombs of the King's wife (or one of his wives) and four daughters. About 125 metres south-east of the pyramid is a square or rectangular mass of limestone rubble, probably the last vestige of a destroyed pyramid, with a causeway extending eastwards.

V. THE PYRAMID OF AMMENEMES III.

This tomb is situated between the Dahshûr Blunted or Rhomboidal Pyramid of Snefru and the village of Minshât Dahshûr.

The approach to the pyramid may well have been from a lower temple on the desert edge but no evidence of such a temple has yet been found. From the desert edge there extends a long and wide causeway originally paved with limestone slabs and walled on both sides with mud-brick. The width of the causeway, including the walls, was about 18.50 metres and its length some 600 metres. Near the western end of this causeway, and east of the pyramid, are extensive foundations, believed to be of dwellings for the priests and other officials. Abutting on the east side of the pyramid was the upper temple of which almost nothing is now visible.

The pyramid has a core of mud-brick, about 100 metres square, but of uncertain original height. This mud-brick core was originally cased with blocks of fine white limestone, chippings of which are strewn around the base. A casing-block found by Perring had a slope-angle of $57^{\circ} 20'$.⁸

A magnificent grey-black granite pyramidion inscribed, *inter alia*, with the names of Ammenemes III, was found east of this pyramid and is in the Egyptian Museum at Cairo.

The present condition of this site is deplorable, and it has long been used as a quarry for mud-bricks, with which the fellaheen build their hovels.

The entrance (now blocked) was on the east side, near the south-east angle, from which a network of passages and vestibules, lined with fine white limestone, penetrated eventually into the sarcophagus chamber which was some distance east of the centre. This chamber contained a magnificent red granite sarcophagus.

Surrounding the pyramid was a temenos-wall 184 metres square.

EGYPTIAN PYRAMIDS

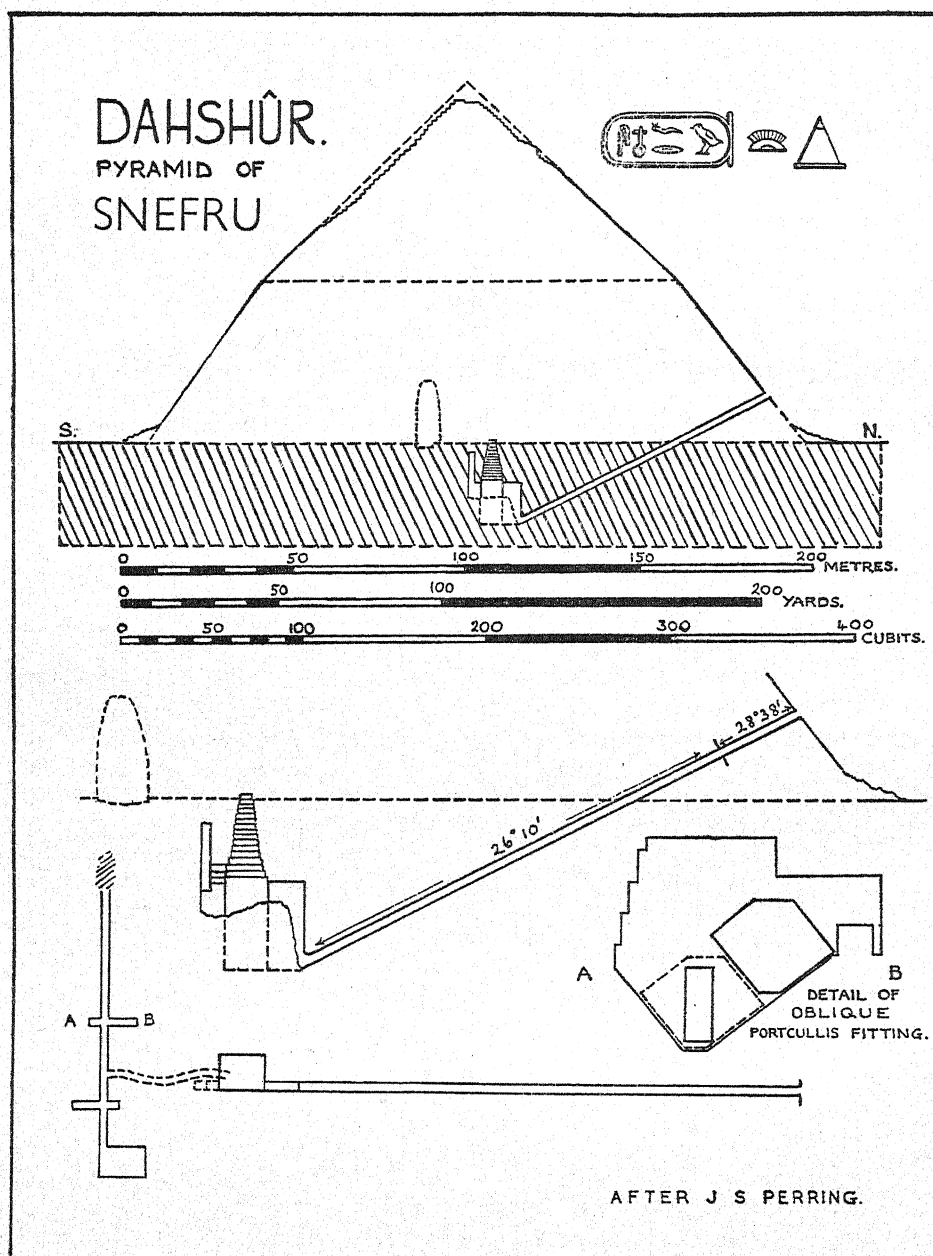


FIG. 24

DAHSHÛR

VI. THE NORTH PYRAMID, 'SNEFRU APPEARS,' AND THE PYRAMID OF HETEPHERES.

The Blunted or Rhomboidal Pyramid of Dahshûr is approached from the remains of a lower temple in a wadi near the desert edge, from which there extends a fine though ruined causeway for about 700 metres in a south-westerly direction to the north-east angle of the temenos wall of the pyramid. This causeway is marked by two parallel lines of limestone rubble, evidently the remains of walls, which the late M. Jéquier considered were never roofed over. At the juncture of the causeway and temenos wall are the foundations of a limestone building perhaps subsidiary to the upper temple of which scarcely a trace is visible.

The pyramid is 190 metres square and about 100 metres high, the lower portion sloping at $54^{\circ} 41'$ and the upper part at 43° . This is the only known instance of a pyramid with two angles of inclination, and the reason for this change in angle may have been to reduce the weight of masonry that had to be borne by the roof of the upper chamber. The body of the pyramid is believed to be of local coarse limestone, and the casing, most of which is still *in situ*, is of fine white limestone.

There are two entrances, passages, and main chambers. That in the approximate centre of the north side is eleven metres above the base. It is of special interest by reason of the two door-sockets, one near the top of each wall-support and intended to contain a flap-door; the late Mr Engelbach considered this feature posterior to the construction of the pyramid.⁹ From this entrance a ramp extends downwards at $28^{\circ} 38'$ for the first 13 metres and $26^{\circ} 10'$ for the remaining 65 metres into the interior. At the end of this ramp is a short horizontal passage 12 metres high leading to a fine chamber the roof of which is corbelled on all four sides. Beyond this chamber is a shaft in the neighbourhood of which excavations are now (May, 1947) in progress.

The western entrance is still sealed with the original blocking stones. Its approximate position, according to Vyse and Perring, is about 29 metres above the base of the pyramid and slightly south of the centre of the west side. It leads to the usual ramp, which descends at about $26^{\circ} 36'$ for 68 metres to a horizontal passage with two portcullis slabs, and then follows into a chamber with a roughly corbelled roof, above but slightly east of that at the end of the northern passage. It can be explored from the chamber at the south end of the northern passage.

Surrounding the pyramid is a temenos enclosure consisting of two parallel walls with a space between them.

The attribution of this tomb to Snefru is based on the recent finding of his Horus name *Neb-Maat* on a foundation stone at the north-east corner, and his cartouche on a stone block below the pavement of the upper chamber.¹⁰

Immediately south of the Rhomboidal Pyramid is a small pyramid, some of the casing of which has recently (May, 1947) been exposed around the entrance in the centre of the north side. This example is about 55 metres square and 21 metres high (originally 32 metres high) and has a slope angle of $50^{\circ} 11'$

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(Vyse).¹¹ The entrance leads to two ramps in the form of a V, each arm being about 9 metres long and inclined at 40° . At the end of one of these ramps is a fine chamber corbelled on all four sides. Excavation at the south-west corner of this pyramid revealed the name of Hetepheres, wife of Snefru and mother of Kheops.¹² It will be recalled that during the reign of Kheops her tomb furniture was moved from Dahshûr to the shaft east of the Great Pyramid, where it was re-discovered by Rowe and Reisner in 1926 and is now in the Cairo Museum.

VII. THE NORTH MAZGHÛNA PYRAMID.

Neither this nor the South Mazghûna pyramid is worth visiting as they are both shapeless hummocky mounds raised not more than a metre above the surrounding desert.

The North Mazghûna pyramid was opened by the late E. Mackay under Petrie's direction about 1911. Excavation in the surrounding area revealed no trace of any temenos wall. The superstructure of the pyramid had been totally destroyed but it is believed to have been of limestone. The entrance was not found. A flight of ten steps descending from north to south may or may not have led immediately from an entrance on the north side of the pyramid, inasmuch as entrances on the north sides of late XII Dynasty pyramids are the exception rather than the rule. This flight descended at 27° to the south, where there was a vestibule and then a right-angled turn westwards, for a further flight of 31 steps at $13^\circ 30'$. On either side of both these stairways there was a slight ledge. On the walls of the vestibule between the two stairways were two charcoal drawings, one of which was of a boat. At the west end of the flight of 31 steps was a transverse portcullis-slab of quartzite, raised 1.60 metres from the floor. Then followed other passages, vestibules, portcullis-slabs and steps to the sarcophagus chamber. The portcullis-slabs were all transverse, slightly inclined, and of quartzite, and the sarcophagus was of the same material. All the exposed surfaces of the quartzite stones in the tomb, including the portcullis-slabs, were painted red, and some had vertical strokes in black in addition, probably intended to represent red granite.

It was concluded that this pyramid may have been built for Ammenemes IV or his immediate successor.

VIII. THE SOUTH MAZGHÛNA PYRAMID.

This example is situated about half a kilometre south of the last, and immediately north of a long cultivated wadi running east and west.

No remains of lower temple or causeway were found. There was however a small upper temple of mud brick east of the pyramid.

The pyramid consists now of a shapeless hummocky mass of limestone chippings, but was originally about 55 metres square. On account of the absence of casing-stones the height and slope-angle could not be determined. It consisted of a core of mud-brick, of which only one or two courses remained, and a casing of limestone, of which nothing remained except the trench in which it was set. It was opened in 1910-11 by the late E. Mackay under the direction of Flinders Petrie.

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The entrance (now blocked) was in the middle of the south side, and led to a flight of steps at $22^{\circ} 30'$, at the bottom of which was a red granite transverse portcullis-slab. Behind this was another flight of steps leading at 18° to a second transverse portcullis-slab of red granite. A series of three passages at right-angled turns leads from this second portcullis-slab to the sarcophagus chamber, which originally had a pointed roof. It contained a red quartzite sarcophagus, south of which was a square hole for a set of canopic jars.

The pyramid may have been built for either Ammenemes IV, or his sister and successor Queen Sebeknefru.

It was surrounded by a temenos wall of the typical wavy mud-brick type characteristic of the Middle Kingdom. There was a gap in the middle of the east side for the upper temple, and another near the east end of the south side, where was the original entrance to the pyramid-enclosure.

In view of the shortness of the reigns of Ammenemes IV and Sebeknefru, the two Mazghûna pyramids may never have been completed.

EGYPTIAN PYRAMIDS

REFERENCES

1. DE MORGAN, J. *Fouilles à Dahchour*, I, p. 5.
2. VYSE, H. C. *Gizeh*, III, pp. 57-63 ; Perring, J. S., *Gizeh*, III, plate 13.
3. DE MORGAN, J. *Fouilles à Dahchour*, March-June, 1894 (1895), pp. 47f.
4. VYSE, H. C. *Gizeh*, III, p. 15.
5. VYSE, H. C. *Gizeh*, III, p. 64.
6. VYSE, H. C. *Gizeh*, III, p. 63.
7. *Z.A.S.*, XLII, pp. 1-11.
8. VYSE, H. C. *Gizeh*, III, p. 17.
9. Verbal communication to the author.
10. *Illus. London News*, 5th April, 1947, p. 344.
11. VYSE, H. C. *Gizeh*, III, p. 70.
12. *Illus. London News*, 5th April, 1947, p. 344.

LITERATURE

1. GENERAL

- PETRIE, W. M. F. *Season in Egypt*, 1888, Chapter VI.
 DE MORGAN, J. *Fouilles à Dahchour*, 1894-5.

2. INDIVIDUAL PYRAMIDS

- (a) SESOSTRIS III.
 VYSE, H. *Gizeh*, III.
 DE MORGAN, J. *Fouilles à Dahchour*, I, 47-51 and passim.
- (b) NORTH STONE PYRAMID.
 VYSE, H. *Gizeh*, III, 1837-40.
 PERRING, J. S. *Gizeh*, III, plate XIV.
 DE MORGAN, J. *Fouilles à Dahchour*.
 BORCHARDT, L. in *Z.A.S.*, XLII, p. 2.
- (c) MENKAUHÖR.
 BORCHARDT, L., in *Z.A.S.*, XLII, pp. 1-11.
- (d) AMMENEMES II.
 DE MORGAN, J. *Fouilles à Dahchour*, II, 1-86.
- (e) AMMENEMES III.
 DE MORGAN, J. *Fouilles à Dahchour*, I, 87-177 ; II, 98-109.
 MASPERO, G., in *Annales du Service des Antiquités*, III, 206-7.
- (f) SNEFRU AND HETEPHERES.
 VYSE, H. *Gizeh*, 1837-40, III, pp. 65-70.
 PERRING, J. S. *Gizeh*, 1837-40, III, plates XV, XVI.
 JÉQUIER, G. *Douze Ans de Fouilles dans la Nécropole Memphite*.
 Neuchâtel, 1940.
Illus. London News, 22 March, 1947 and 5 April, 1947.

(g and h) PYRAMIDS OF MAZGHÛNA.

- PETRIE, WAINWRIGHT AND MACKAY. *The Labyrinth, Gerzeh, and Mazghuneh*, 1912.

CHAPTER 7

Lisht

I. THE PYRAMID, 'BEAUTIFUL HEIGHT OF AMMENEMES (I).'

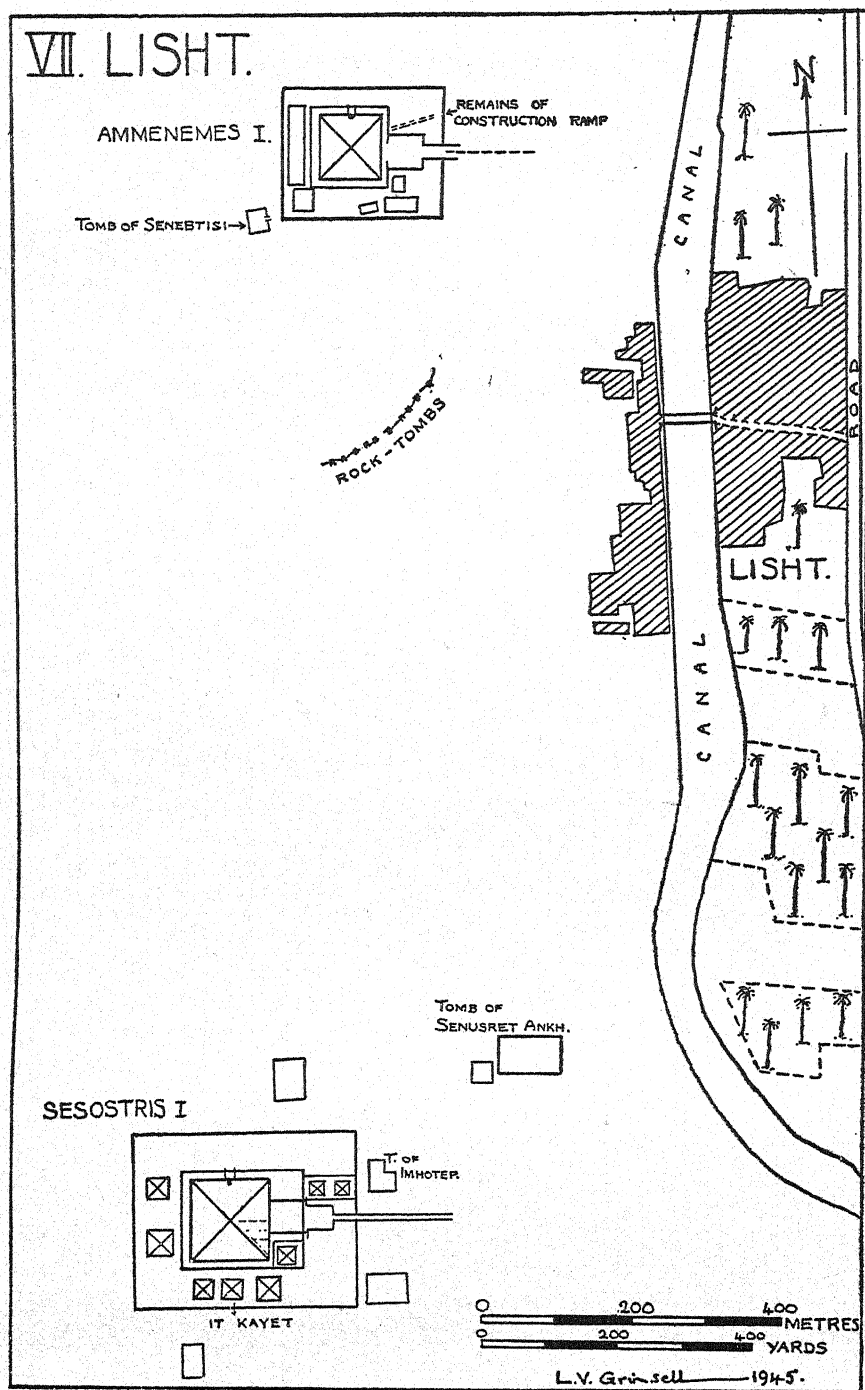
No lower temple has yet been found, but remains of a causeway have been detected. On the east side of the pyramid stood the upper temple which shows signs of having been rebuilt. The original intention was to build the upper temple on the same level as the pyramid, but it appears that during construction the slope of the ground proved too great a difficulty and the site was abandoned in favour of a lower situation where a smaller temple was built, blocks from the original structure being incorporated in the later edifice.¹ The temple as finally reconstructed contained limestone reliefs including a panel of Ammenemes I receiving the gift of life from the gods; and there were also the usual ceiling slabs with representations of stars in painted relief. Two foundation deposits were found, one near the west end and the other beneath the north-east corner. They consisted of small alabaster vases, bricks, and sandstone paint-grinders.

Two false doors were found, one of limestone and the other of red granite, both being in the Egyptian Museum at Cairo. That of fine white limestone appears to have been found just outside the northern wall of the west end of the temple. On it are inscribed the various names and titles of Ammenemes I. The red granite false door is much larger but only about two-thirds complete. It was found in front of the entrance about the centre of the north face of the pyramid. It was probably enclosed in an otherwise destroyed small offering shrine covering the entrance to the pyramid. Near the limestone false door was found a red granite offering table, on the sides of which are processions of nome-figures. Little of this temple can now be seen except a few of the floor-slabs.

The pyramid was 85-90 metres square and is at present some 20 metres high. The main body was of limestone derived largely from Old Kingdom tombs, and the casing was of blocks of fine white limestone, but none of the casing blocks can now be seen. The pavement around and beneath the pyramid was likewise constructed partly of blocks of limestone from Old Kingdom tombs, apparently from those at Gîza and Saqqâra. Some of the paving blocks were jointed with wooden dovetail cramps. Beneath the south-west corner of the pyramid was a foundation deposit (page 68).

The entrance, which is in the north face, was lined with granite slabs some of which are still in place. This led to a ramp inclined at about 10 degrees downwards for a distance of 34 metres, at the end of which is an upper chamber from which a shaft 11 metres deep extends to the sarcophagus chamber which is

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permanently under water. After the king was interred, the ramp was blocked with granite monoliths which exactly fitted its width. This pyramid is accessible only with difficulty.

Inside the area enclosed by the temenos wall are some mastabas, including that of Antefoker, vizier and overseer of the pyramid town. Among the tombs outside the temenos wall is that of Senebtisi, which has been explored and published by the Metropolitan Museum of Art, New York.² West of the pyramid were the supposed tombs of the princes and princesses, arranged in rows. In one of them was a fragment of stone bearing the name of 'the royal daughter Neferu.'

East of the pyramid and north of the upper temple are the remains of a mud-brick construction ramp.

Between the pyramid of Ammenemes I and that of Sesostriis I are some rock tombs, believed to be of the Old Kingdom.

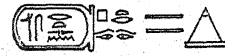
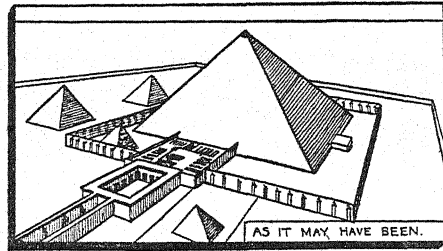
II. THE PYRAMID 'PROTECTED PLACE OF SESOSTRIS (I),' KNOWN ALSO AS 'SESOSTRIS (I), SURVEYING THE TWO LANDS,' AND SURROUNDINGS.

No lower temple to this pyramid has yet been found. Remains of a causeway extend westwards from the desert edge to the upper temple. The causeway was lined on each side with walls of fine white limestone, the lower parts of which were painted to resemble granite, and the upper parts decorated with scenes in coloured relief, *e.g.* fishing scenes and captives taken in foreign campaigns. Osirid statues of Sesostriis I were placed in niches along the inner faces of both walls of the causeway at intervals of 10 metres. This arrangement may have been inspired by the similar arrangement of Osirid statues of Mentuhotpe in the Dynasty XI pyramid-temple at El Deir el Bahari.³

The upper temple is the best preserved of all the upper temples of Dynasty XII, and in its general plan it closely follows the Old Kingdom tradition. It was approached from the east by a doorway which cut the outer temenos wall. This doorway led into a corridor with statues on either side, and at the west end of this was a pillared court. Behind the pillared court is the inner section of the temple, comprising the usual five statute-niches, the sanctuary which originally contained the false door and offering table, and the storerooms. The temple walls were decorated with coloured reliefs, some of which are now in the Egyptian Museum at Cairo. Among the ruins is a broken red granite architrave with the titles 'Son of Rē, Senusret, beloved of Osiris, living for ever.' Near the north-west corner of the pillared court was a grey granite table of offerings, the sides of which were decorated with representations of nome-figures bringing offerings. In a depression north of the upper temple and east of the pyramid were found a magnificent series of limestone statues of Sesostriis I, now in the Egyptian Museum at Cairo.

On the north side of the pyramid was a small offering shrine covering the entrance.

LISHT. PYRAMID OF SESOSTRIS I.



DETAIL OF PANELS
ON
TEMENOS WALL.

AFTER GAUTIER, JEQUIER, AND
BULLETINS OF MET. MUS. NEW YORK

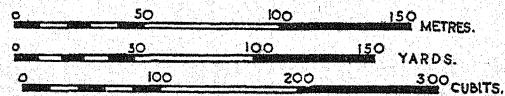
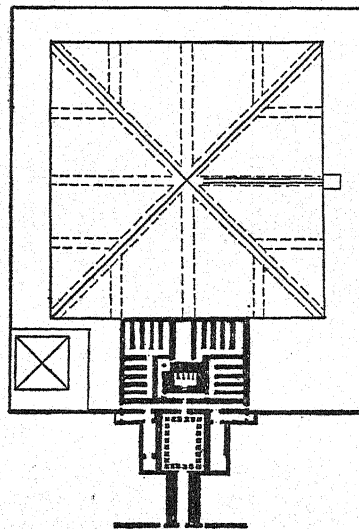
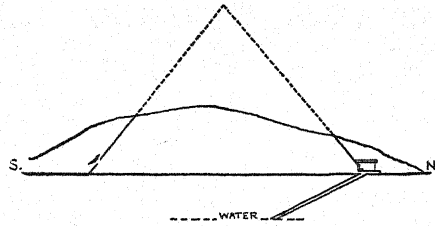


FIG. 25

The pyramid was about 105 metres square and 61 metres high, giving a slope angle of about 49°. About eight courses of the original casing were uncovered on the west side in 1931-32. The method of construction was as follows :

'When the square which formed the base of the pyramid was laid out, eight massive walls of heavy but irregular stone were built radiating from the centre of the square to the four corners and to the middle of each of the four sides. Eight more walls of equal strength were laid parallel to the latter, halfway between them and the corners of the pyramid. The ground plan thus presented sixteen chambers of irregular size and shape, their outside walls being the casing of the pyramid.'⁴

About four of these massive walls are seen protruding on the east side, behind and south of the upper temple. The interstices were filled with loose stones and sand. The casing consisted of blocks of fine white limestone, some on the west face being still visible. At the south-east corner was a foundation-deposit of an ox-head placed in a hole. Quarry-marks on some of the blocks of coarse local limestone showed that they were obtained from the quarry near the pyramid of Ammenemes I to the north.

In front of the entrance, which is in the approximate centre of the north side, are some paving stones with slots for wooden dovetail cramps, some of which were found by Gautier and Jéquier. The entrance is accessible and leads to a ramp descending at about 25° to a sarcophagus chamber which is permanently filled with water on account of the rise in the level of the Nile since the Middle Kingdom. The ramp is roofed and walled throughout its length with fine and smooth slabs of red granite.

Enclosing the pyramid are an outer temenos wall of mud-brick and an inner temenos wall of fine white limestone originally about 5 metres high, decorated every 5 metres on both sides with superb reliefs, some of which are still in place on the west and south sides (see fig. 25). Representative portions of these reliefs are in the Cairo Museum and the Metropolitan Museum of Art, New York.

The outer temenos wall enclosed the entire upper temple while the inner wall enclosed the inner section of the temple.

Around the large pyramid are the vestiges of nine small examples,⁵ of which there is now little to be seen. They are all enclosed in the area bounded by the outer temenos wall. They were all steeper sided than the main pyramid, and each had a small temple to the east and an offering shrine on the north.

One of these small pyramids, on the south side, was of the king's daughter It Kayet, as shown by inscriptions from the chapel adjoining it on the east. One at the south-east corner, between the inner and outer temenos walls, was about 21 metres square and had a false door in the centre of the north side where the entrance is now visible : the core is of coarse limestone and the casing of fine white limestone. Just north of this, and within the inner temenos wall, was a small pyramid remarkable for having two layers of casing (still visible on the

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west side); it was contained in its own small temenos wall. Near the north-east corner of the main pyramid, and between the inner and outer temenos walls, are the remains of two small examples, of which that on the east side had at each corner a foundation-deposit of bones of oxen mixed with pottery and blue glazed beads.

Among the private tombs near here is that of Senusretankh, High Priest of Ptah in Memphis, Royal Sculptor and Builder, Dean of the College of Scribes, etc. It was remarkable on account of a large portion of the Pyramid Texts inscribed on its walls (see Part I, Chapter 5). They are beautifully incised in small columns. At the west end of the sarcophagus chamber is a palace-façade decoration. The key to this tomb can be obtained by arrangement with the Service of Antiquities at Cairo.

REFERENCES

1. *Bulletin of Met. Mus., New York*, Nov. 1921. Part II.
2. MACE AND WINLOCK. *The Tomb of Senebtisi*, 1916.
3. *Bulletin of Met. Mus., New York*, July 1909.
4. *Bulletin of Met. Mus., New York*, Dec. 1924. Part II.
5. *Bulletin of Met. Mus., New York*, Nov. 1934, II, p. 9. A plan showing all nine small pyramids and embodying other unpublished details has just appeared (I. E. S. EDWARDS. *The Pyramids of Egypt*. Pelican Books, 1947, fig. 26).

LITERATURE

1. PYRAMID OF AMMENEMES I

GAUTIER AND JÉQUIER. *Fouilles de Licht*, 1902.
Bulletins of New York Met. Museum of Art, April, 1907; July, 1907; Oct., 1908; Oct., 1914; Nov., 1921; Dec., 1922.

2. PYRAMID OF SESOSTRIS I

GAUTIER AND JÉQUIER. *Fouilles de Licht*, 1902.
 LYTHGOE, A. M. 'Excavations at the South Pyramid of Lisht,' in *Ancient Egypt*, 1915, pp. 145-153.
Bulletins of New York Met. Museum of Art, Sept., 1908; July, 1909; Feb., 1915; July, 1920; Dec., 1924; March, 1926; April, 1933; Nov., 1933; 1934, Part II.

3. PRIVATE TOMBS

Bulletin of New York Met. Museum of Art, Feb., 1915 (II) for mastaba of Imhotep; *Ibid*, 1933, for mastaba of Senusretankh.
 MACE AND WINLOCK. *Tomb of Senebtisi at Lisht*, 1916.

CHAPTER 8

Maidûm and The Faiyûm

I. THE SOUTH PYRAMID 'SNEFRU APPEARS,' AND SURROUNDINGS.

There appears to have been a lower temple on the desert edge at the eastern end of the causeway, but excavation was difficult as the site was below water level. Two foundation deposits of pottery were however found.

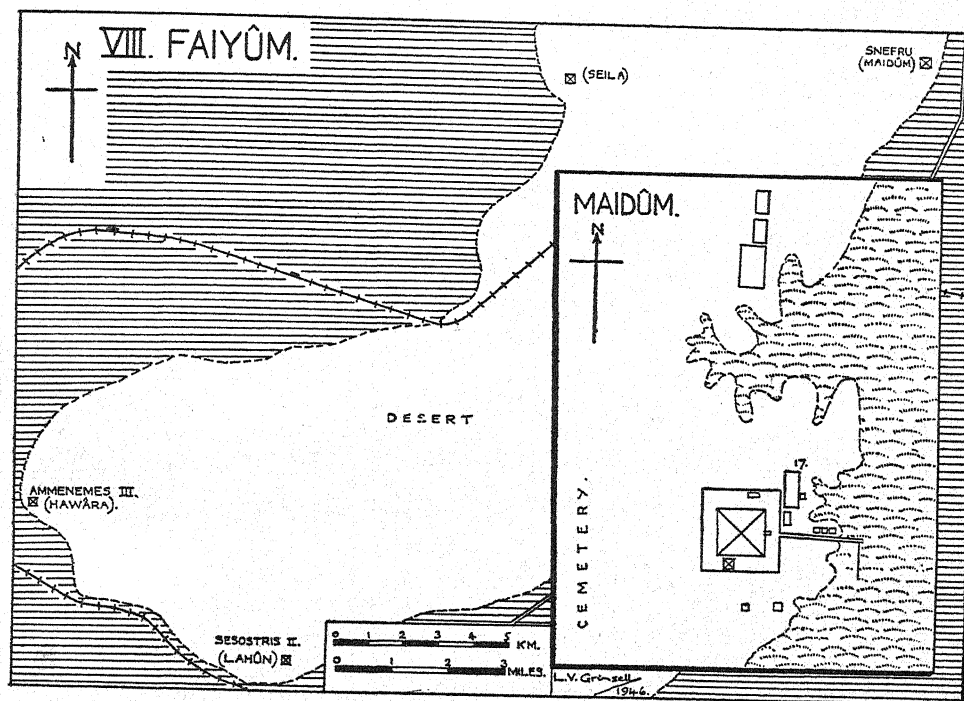
From the desert edge a fine causeway extends from the site of the lower temple to the upper temple, which is covered with debris with the exception of the sanctuary. This was excavated by Petrie who found it to be in an almost perfect state of preservation. The entrance leads into a tiny chamber, the walls of which are inscribed with graffiti written by ancient Egyptian visitors. (See Part I, Chapter 1). Behind this is the inner chamber, and at the western end of this, protruding from the roof, are two limestone stelae which originally had an offering table between them. The roofing of this little sanctuary is in perfect condition. It is possible that neither temple nor pyramid was ever completed.

South of the pyramid-causeway there was originally a causeway roughly parallel but leading to the original mastaba. When the latter was covered with the pyramid, this early causeway was buried by the waste material which accumulated during the construction of the later edifice.

The pyramid, which forms a landmark for many miles around, has its base covered by debris. It was originally about 144 metres square and 92 metres high, and the casing gives a slope-angle of $51^{\circ} 52'$.¹

According to Flinders Petrie,² the pyramid is built on a specially prepared pavement which underlies the casing at each part examined by him. There was a primary square or rectangular mastaba the sides of which were 50-60 metres long and the height of which was 12-15 metres. Outside and above this mastaba the masonry was laid to give the appearance of 7 (possibly 8) steps, by building a series of accretion walls each of which had a casing of fine white limestone. It appears that 'the original mass was carried upward and heightened as the circuit was increased,' and lastly the spaces between the steps were filled and cased likewise with blocks of fine white limestone. The angle of slope of the original mastaba and of the accretion-faces is 73° - 75° , those which are lower being the steeper. The slope-angle of the outer casing is about $51^{\circ} 52'$. Most of this casing was removed at an early date, perhaps during the reign of Ramesses II, but portions are still visible behind the upper temple and around

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the entrance to the pyramid. At present only about three of the accretion-faces are visible. The discovery of the casing-stones of the finished pyramid shows that this was one of the earliest true pyramids.

On the north side of the pyramid about 30 metres above the ground-level, is the entrance, leading to a ramp about 57 metres long which slopes downwards at angles varying between 27° – 30° into the approximate centre of the pyramid. Just before the bottom of the ramp is a slot, probably for a wooden door. Before the sarcophagus chamber is reached the ramp passes two antechambers, the first to the east and the second to the west, the floor here being horizontal and therefore assuming the form of a passage. The passage continues for a short distance past the antechambers and ends at the bottom of a vertical shaft, at present containing a modern wooden staircase, at the top of which is the sarcophagus chamber, now empty. It was here that Petrie, in 1891, found fragments of a wooden coffin believed to belong to Snefru. The sarcophagus chamber has a fine corbelled roof of limestone, in about 7 steps. In this roof at least 4 sockets for cross-beams are visible, and one contains a log-stump, possibly contemporary with the pyramid.

It is noteworthy that in Dynasty XVIII a festival was held at this pyramid and temple in memory of King Snefru.

The pyramid is surrounded by a temenos-wall which bounds an enclosure about half as wide again as the pyramid, and encloses on the south side a small pyramid of which nothing can be distinguished.

Private Tombs.

In the immediate vicinity of the pyramid of Maidûm are the remains of some important mastabas of the end of Dynasty III, the best of which are north of the causeway.

The largest example, known as 'No. 17,' consists of an enormous structure of coarse local limestone faced with mud-bricks. The entrance (accessible) leads by a rather dirty mud-brick tunnel to a chamber containing a fine sarcophagus of red granite.

Some of the other tombs, which are very ruined and scarcely worth visiting, are famous by reason of their statuary and reliefs. The combined tomb of Nefert and Rahotpe contained the magnificent seated statues which are among the finest exhibits in Cairo museum. In the same tomb were reliefs the subjects of which included boatbuilding, fishing, butchery, and processions of offering bearers from the villages. Another double tomb was that of Neferma'at and his wife Itet (?) which contained some fine reliefs executed by an unusual method of colour-inlay. The subjects include hunting, processions of offering bearers, butchery, fishing, catching birds, ploughing, and boatbuilding. The celebrated painting of geese came from this tomb, and it is of interest to note that in the streams and ponds of Maidûm village to this day there are abundant geese the quality and variety of which resemble those of the tomb of Neferma'at.

II. THE PYRAMID OF SEILA.

This ruined pyramid is very difficult to reach, and I have never visited it. The structure appears to have been about 26 metres (sav 50 cubits) square,

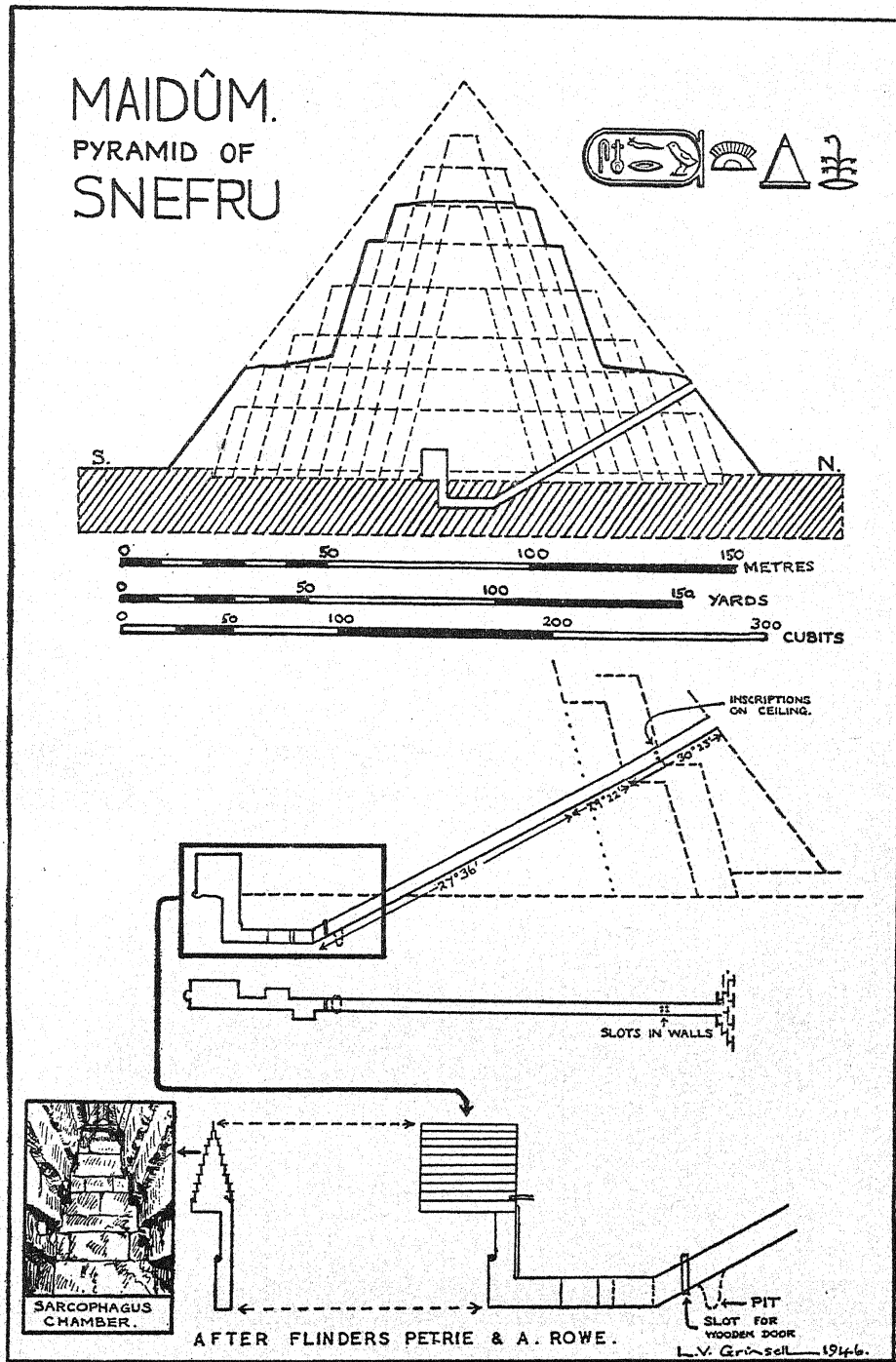


FIG. 26

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and is now some 7 metres high. The material seems to be a core of coarse limestone filling and a casing of fine limestone. An incursion into the north side may mark the entrance and ramp or passage, or it may be the result of unscientific exploration. The limestone blocks are stacked in headers and stretchers, and are mortared together with a mixture of Nile mud and sand. The pyramid appears to have been constructed in steps or accretions. Its period is unknown but it is probably of Dynasty III.

III. THE PYRAMID OF AMMENEMES III AT HAWÂRA.

This pyramid is easily accessible from the station of Hauwâret-el-Maqta, on the railway between Beni Suef and Medinet-el-Faiyûm.

There appears to be no evidence of any associated lower temple or causeway and the situation of the pyramid right on the desert edge would seem to rule out the possibility of there ever having been either. The Labyrinth was immediately south of the pyramid, on the site now occupied by humps and hollows and mud-brick walls of a later date. Whether the Labyrinth had any connection with the pyramid, or served the purpose of an upper temple, may never be known. There were however indications of a temple south of the pyramid, where a number of granite chippings may still be seen.

The pyramid was about 100 metres square and perhaps 58 metres high, with a slope-angle of $48^{\circ} 45'$. The body of the pyramid contains a series of mud-brick walls, arranged at right angles and diagonally. The triangular interspaces were filled with mud-bricks. The whole was cased in fine white limestone but none of this is now visible.

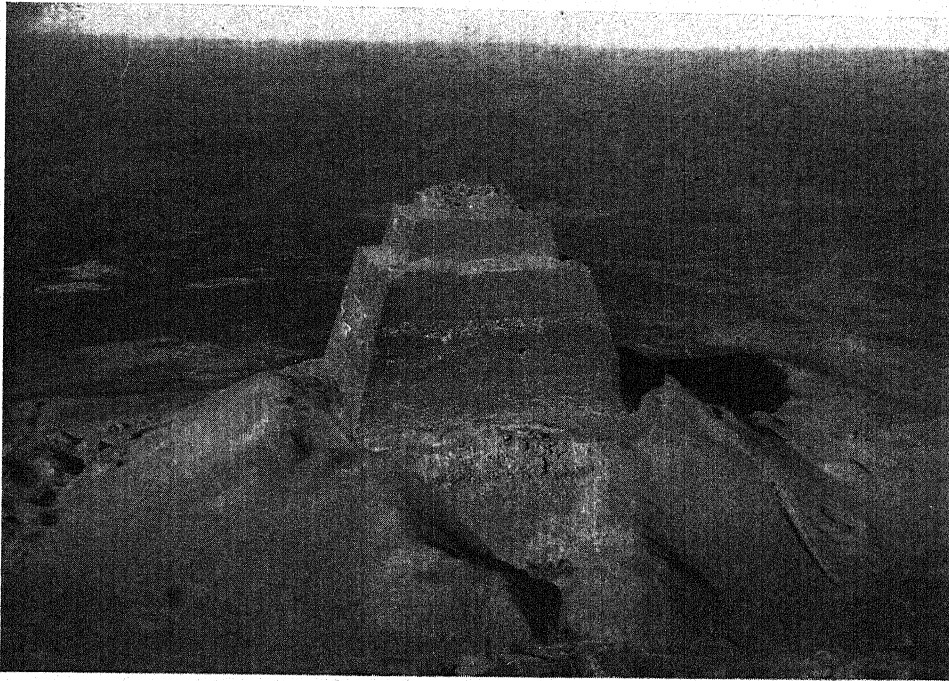
The entrance was on the south side, and from it there led a flight of steps, at $19^{\circ} 37'$, downwards to a vestibule, roofed by a transverse portcullis-slab which, when slid aside, led to another vestibule, followed by two passages at right angles to one another. One of these was a decoy; the other (turning to the right) led to another vestibule and transverse portcullis-slab, behind which was yet another passage and vestibule. Behind this was another transverse portcullis-slab leading to another passage. In the floor of this there are two false wells, and from here is a short passage leading to the sarcophagus chamber. This chamber had no door but was entered by a hole left for a roof-block which was inserted after the interments had been made.

The sepulchral chamber is hollowed out of one block of yellow quartzite, cut and polished with exquisite truth. It is about 7 metres long and about $2\frac{1}{2}$ metres wide inside, and some 55 cm. thick, and probably weighs about 110 tons. The flat roof is formed of three blocks of the same material. This flat roof is crowned by a pointed roof and above this was an arch of mud-brick. The chamber contained the probable remains of Ammenemes III and his daughter Ptahneferu, but they had been burnt, perhaps by tomb-robbers, and little was left.

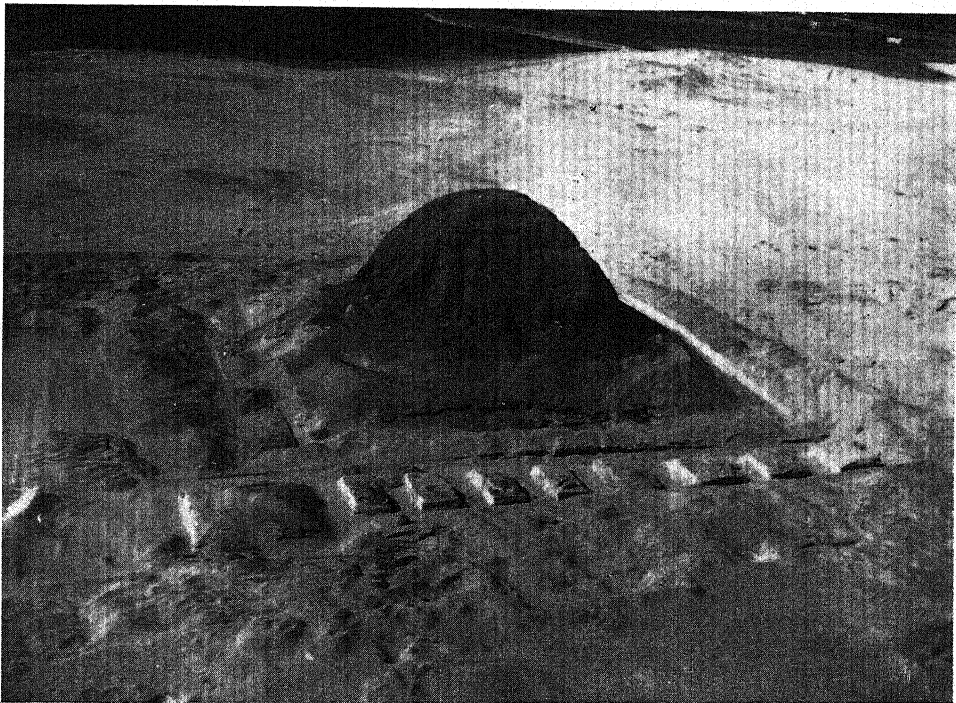
IV. THE PYRAMID 'SESOSTRIS (II) APPEARS,' AND SURROUNDINGS.

The pyramid of Sesostris II, which is situated at El Lahûn on the narrow strip of desert between the Nile Valley and the Faiyûm, is similar in many

PLATE XIV



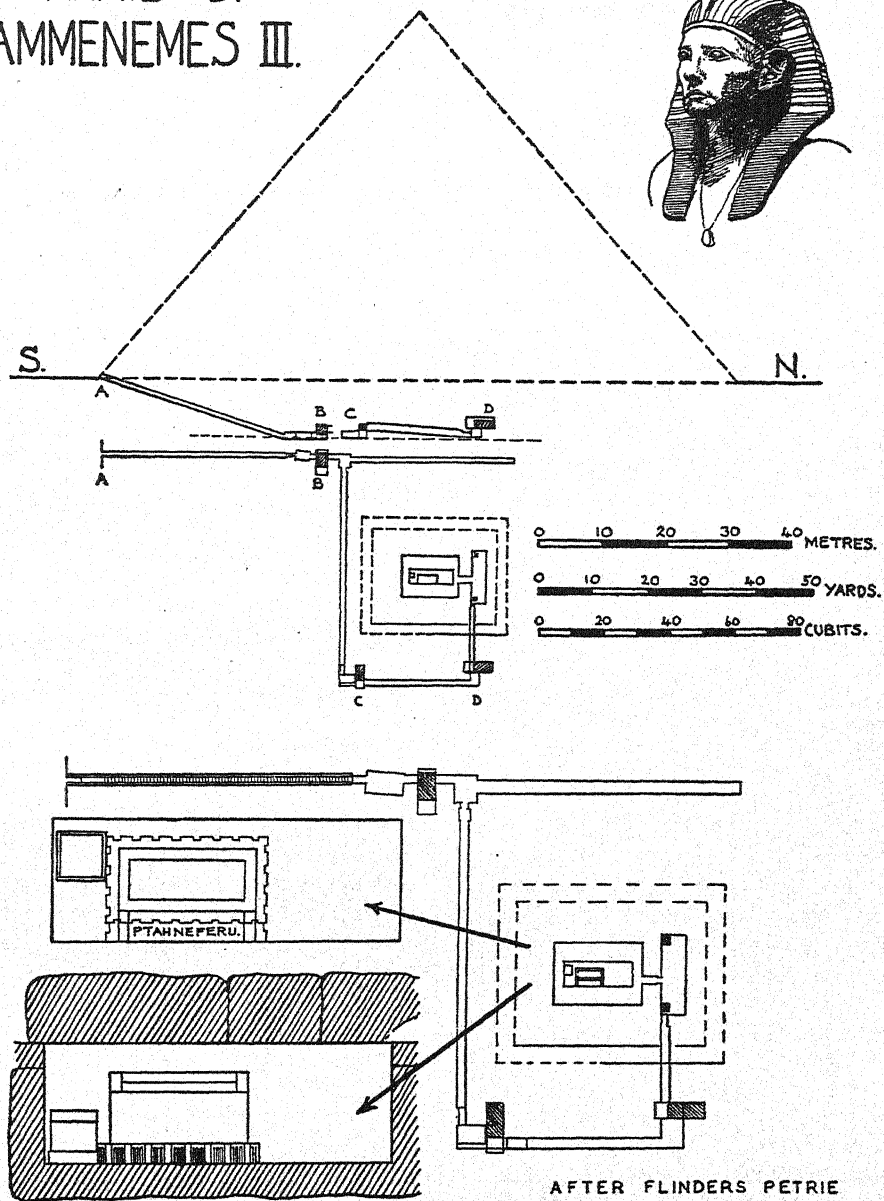
(a) MAIDÛM: PYRAMID OF SNEFRU. Oblique Air-photograph.



(b) LAHÛN: PYRAMID OF SESOSTRIS II. Oblique Air-photograph

*Both Royal Egyptian Air Force Copyright
facing p. 178*

HAWARA. PYRAMID OF AMMENEMES III.



L.V. Grimsell 1946.

FIG. 27

EGYPTIAN PYRAMIDS

respects to that of Hawâra, but its essential features are much more clearly defined.

The pyramid complex begins at the possible remains of a lower temple some 1,200 metres due east of the pyramid, and near the edge of the cultivation area just south-west of the so-called town of Kahûn where dwelt the workmen and officials concerned in constructing the pyramid. This supposed lower temple is approached by a causeway about 80-100 metres long extending westwards from the edge of the cultivation.

The causeway between the lower temple and the upper temple does not appear to have been discovered.

Outside the centre of the east face of the pyramid were the remains of the upper temple, part of which was constructed with red granite slabs incised with hieroglyphs inlaid in green. Of this temple little was left but the foundations and two possible foundation deposits of pottery, some wall-reliefs, and a fragment of grey granite which is believed to have formed part of an altar.

About 70 metres north of the north-west corner of the pyramid were the remains of what may have been a Heb-sed structure.

The pyramid, being largely of mud-brick, is in a ruined condition and its present form is of a rounded square. It was originally about 106 metres square and 48 metres high, with a slope-angle of about $42^{\circ} 35'$. It is situated on a natural rise, the first 12 metres of its own height being of the undisturbed rock. On this undisturbed rock base was constructed a square structure which was quartered by walls parallel to its sides, and then divided into eighths by diagonal walls. The lower parts of these walls are of limestone and are still clearly visible; the upper parts are of mud-brick, and the triangular spaces between the walls were filled with mud-brick. The pyramid was originally cased with limestone blocks, but graffiti on stones in the vicinity show that the stones of the temple and pyramid-casing were removed during the reign of Ramesses II. A few were, however, discovered by Petrie who determined the slope-angle of the pyramid from them.

In the approximate centre of the south side of the pyramid were found a number of black granite chippings, some of which were incised with hieroglyphs; they had probably formed a pyramidion.

The entrance was on the south side and near the south-eastern angle. There was a wide shaft about 12 metres deep, about 25 metres south of the south face of the pyramid, and it was down this shaft that the granite sarcophagus was lowered. At the bottom of the shaft is a long passage leading into the pyramid, immediately outside of which is a narrow shaft which would have been too narrow to have served as a passage for the sarcophagus. The passage continues northwards beneath the pyramid and leads to a vestibule. North of this the passage continues as a ramp with an upward incline of $06^{\circ} 46'$ to the antechamber and finally to the sarcophagus chamber which was on the west of the antechamber and axis of the passage. The sarcophagus chamber was of red granite and had an arched roof. It is about 5 metres long, just over 3 metres wide, and nearly 3 metres high at the highest part. At the western end was the

MAIDÛM AND THE FAIYÛM

sarcophagus, likewise of red granite. Near the sarcophagus was a fine offering-table of white alabaster bearing inscriptions relating to Sesostris II who was the builder of the pyramid. Further evidence pointing to Sesostris II as the constructor of the pyramid was provided by the finding of a block of stone at Ihnâsya, inscribed with his cartouche, and probably removed from the upper temple during the reign of Ramesses II.

Surrounding the pyramid on the east, south, and west sides, were rows of trees the circular beds of which were found. The species of tree could not be identified. As there were about 42 trees on the only two sides (east and south) completely preserved, it is thought that each was planted by a representative of one of the 42 nomes.

Immediately north-east of the Lahûn pyramid was a (now ruined) pyramid of mud-brick, originally about 27.50 metres square, and 18 metres high, with a slope-angle of about $54^{\circ} 15'$. No central chamber has yet been found. Beneath each corner of the pyramid, in square holes, were foundation deposits of rough earthenware vases. It is considered to be the pyramid of either Sesostris II's queen, or one of his daughters named Atmuneferu.

Both large and small pyramid were enclosed in the same temenos-wall, which was of mud-brick, and also enclosed several other tombs, including eight large mastabas on the north side of the large pyramid.

On the slopes of the hills to the south and west are a number of rock-tombs and pit-graves, some of which are still full of human bones. Among these there is the tomb of Inpy, an architect of Sesostris II.

V. THE MONUMENTS OF BIAHMU.

These monuments, described by Herodotus as pyramids, are now known to have been colossal seated statues of Ammenemes III placed on pedestals.

EGYPTIAN PYRAMIDS

REFERENCES

1. PETRIE. *Meydum and Memphis*, 1910, p. 1.
2. PETRIE. *Medum*, 1892, p. 6.

LITERATURE

1. MAIDÛM

- PETRIE, W. M. F. *Medum*, 1892.
PETRIE, MACKAY AND WAINWRIGHT. *Meydum and Memphis*, 1910, pp. 1-37.
BORCHARDT, L. *Die Entstehung der Pyramide, an der Baugeschichte der Pyramide bei Meydum Nachgewiesen*, 1928.
ROWE, A., in *Univ. Pennsylvania Museum Journal*, XXII, No. 1 (1931).
MAYSTRE, C., in *Bulletin de l'Inst. Français d'Arch. Orientale*, XXXV, 89-98.
REISNER, G. A. *Tomb Development*, 1936, 195-7, 206-225.

2. SEILA

- BORCHARDT, L., in *Annales du S.A.*, I, 211-214.
POCHAN, A., in *Bulletin de l'Inst. Fr. d'Arch. Orientale*, XXXVII, 1937, p. 161 and plates 1 and 2.

3. HAWÂRA

- PETRIE, W. M. F. *Hawara, Biahmu and Arsinoë*, 1889.
PETRIE, W. M. F. *Kahun, Gurob and Hawara*, 1890.

4. LAHÛN

- PETRIE, W. M. F. *Illahun, Kahun and Gurob*, 1889-90.
BRUNTON, G., in *Ancient Egypt*, I, 49-51.
PETRIE, W. M. F. *Lahun. I, The Treasure*, 1920.
PETRIE, BRUNTON AND MURRAY. *Lahun II, The Pyramid*, 1923.

5. BIAHMU

- HABACHI, L., in *Annales du S.A.*, XL, 1940.

6. GENERAL

- PETRIE, W. M. F. *Seventy Years in Archaeology*, 1931.

APPENDIX I

MUSEUMS

BELGIUM

BRUSSELS.

- Dyn. VI. Blocks with Pyramid Texts from the pyramid of Pepy I.

DENMARK

COPENHAGEN (Glyptothèque Ny Carlsberg).

- Dyn. IV. Alabaster head of Khephren.
Dyn. XII. Granite bust of Sesostri III from El Deir el Bahari. Granite naos of Ammenemes III from the Labyrinth, Hawâra.

EGYPT

CAIRO (Egyptian Museum).

- Dyn. III. Blue tile panel, and statues of Djeser, from the Step Pyramid complex, Saqqâra.
Dyn. III-IV. Grave furniture from tomb of Hetepheres, mother of Kheops.
Dyn. IV. Statues of Kheops, Khephren and Mycerinus, nome triads of Mycerinus.
Dyn. V. Reliefs from solar temple of Neuserrê. Reliefs and columns from upper temple of Sahurê. Columns from pyramid temples of Neuserrê and Unis. Granite head of Userkaf. Model of pyramid complex of Sahurê.
Dyn. VI. Biographical inscription of Uni. Relief from upper temple of Teti. Statues of Pepy I. Statuettes of prisoners from the upper temple of Pepy II. Model boats, from near pyramid of Queen Neit. Gold jewellery from pyramid of Iput.
Dyn. XI. Seated statue of Mentuhotpe III.
Dyn. XII. Statues of Sesostri I from Lisht. False doors of Ammenemes I from Lisht. Reliefs from temenos wall of Sesostri I, Lisht. Granite altar and limestone gargoyle from pyramid complex of Sesostri I. Alabaster offering table of pyramid of Sesostri II, at Lahûn. Pyramidion of Ammenemes III.
Dyn. XIII. Pyramidia from pyramids of Menneferrê, Khendjer II, and others. Basalt bust, probably of Khendjer II.
SAQQÂRA (Museum of Service of Antiquities).
Dyn. III. Vases of alabaster, diorite, and other stones, from the Step Pyramid complex.

EGYPTIAN PYRAMIDS

FRANCE

PARIS (The Louvre).

- Dyn. iv. Statue of Djedefrē, from Abu Rauwāsh.
- Dyn. v. Alabaster vase inscribed Neferirkarē. Fine reliefs from tomb of Akhetotpe, Saqqāra. Seated statue of scribe.
- Dyn. vi. Alabaster vase inscribed Meryrē Pepy (I).
- Dyn. xiii. Statue of Sesostri III.

GERMANY

BERLIN.

- Dyn. iii. False door and faïence inlay from Step Pyramid, Saqqāra.
- Dyn. v. Objects from solar temple of Neuserre. Reliefs and other objects from the pyramids of Abu Sir.
- Dyn. vi. Fragments of stone with Pyramid Texts. Decree of Pepy I exempting the pyramid-cities of Snefru from state dues.

LEIPZIG.

- Dyn. iv. Diorite Statue of Khephren.
- Dyn. v. Reliefs from pyramid complexes of Sahurē and Neuserre. The museums at BREMEN, BONN, Breslau, FRANKFORT, HAMBURG, HANOVER, HEIDELBERG, MUNICH and STRASBOURG, also have reliefs from the Abu Sir pyramid temples of Dyn. v.

GREAT BRITAIN

ABERDEEN.

- Dyn. v. Reliefs from the pyramid complex of Sahurē, at Abu Sir. Block of basalt from upper temple of Kheops, Giza.

LONDON (British Museum).

- Dyn. iii. Faïence tiles from the Step Pyramid of Djoser. Relief from tomb of Rahotpe at Maidūm.
- Dyn. iv. Parts of beard and uraeus of the Sphinx, Giza. Three casing stones from north side of pyramid of Kheops. Wooden coffin of Mycerinus (supposed late copy), human remains, and fragment of basalt sarcophagus, from the pyramid of Mycerinus.
- Dyn. v. Palm column from pyramid complex of Unis. Offering vases of Neuserre and Unis.
- Dyn. vi. Inscribed cylindrical vessel from pyramid of Pepy II. Vases inscribed with names of Teti, Pepy I, and Mernerē.
- Dyn. xi. Painted limestone head of Mentuhotpe III (?) and reliefs from the Dyn. xi temple of El Deir el Bahari. Pyramidion from the pyramid of an Intefaa.
- Dyn. xii. Statues of Sesostri I and III and Ammenemes III. False door of Sihathōr, with inscription relating to hewing of statues for pyramid complex of Ammenemes II.

LONDON (University College).

- Dyn. xii. Portrait head of Sesostri III from his pyramid complex. Model of Hawāra pyramid. (?) Pieces of pyramid casings.

MANCHESTER.

- Dyn. xii. Remains from pyramid of Sesostri II, Lahūn.

OXFORD (Ashmolean). Fragment of wooden coffin of Snefru found in shaft below sarcophagus chamber, Maidūm.

APPENDIX I

ITALY

ROME (Vatican).

Dyn. XI. Head of statue of a Mentuhotpe.

TURIN.

Dyn. IV. Relics from Schiaparelli's excavations in the Giza necropolis.

UNITED STATES OF AMERICA

BOSTON (Museum of Fine Arts).

Dyn. IV. Objects from the pyramid temples of Mycerinus, including statues, nome-triads, and stone vessels, from the late Dr G. A. Reisner's excavations. Alabaster head of Shepseskaf.

CHICAGO (Field Museum).

Dyn. XII. Barque from near the pyramid of Sesostri III at Dahshûr.

NEW YORK (Brooklyn Museum).

Dyn. VI. Superb statuettes of Pepy I, his wife, and Pepy II, in alabaster and slate.

NEW YORK (Metropolitan Museum of Art).

Dyn. V. Palm columns from pyramid temples of Sahurê and Unis. Model of pyramid complex of Sahurê.

Dyn. XI. Reliefs from pyramid temple of Mentuhotpe II-III at El Deir el Bahari.

Dyn. XII. Granite altar, foundation deposits and reliefs from the pyramid complex of Ammenemes I, Lisht. Osirid statues, reliefs, and gargoyle from the pyramid complex of Sesostri I, Lisht.

PHILADELPHIA (University Museum).

Dyn. III. Relics found at and around the pyramid of Snefru at Maidûm.

APPENDIX II

CHRONOLOGICAL TABLE OF PYRAMIDS AND THEIR BUILDERS

OLD KINGDOM

Date B.C.	Dynasty	King	Location of Pyramid or other Tomb
3300-2778	I	Various	Tombs at Abydos and Saqqâra (archaic cemetery)
2778-2693	II III	Various Djeser Sanakht ? Neferka Huni ? Snefru Do.	Tombs at Abydos Pyr. Saqqâra ? Pyr. Zâwyet el 'Aryân Pyr. Maidûm Pyr. Dahshûr
2693-2563	IV	Kheops Djedefrê Khephren Mycerinus Shepseskaf Khentkawes	Pyr. Gîza Pyr. Abu Rauwâsh Pyr. Gîza Pyr. Gîza Tomb, S. Saqqâra Tomb, Gîza
2563-2423	V	Userkaf Sahurê Neferirkarê Neferefrê Neuserrê Menkauhôr Djedkarê (Isesi ?)	Pyr. Saqqâra Pyr. Abu Sîr Pyr. Abu Sîr Pyr. Abu Sîr Pyr. Abu Sîr Pyr. Dahshûr (?) Pyr. S. Saqqâra
2423-?	VI	Unis Teti Pepy I Mernerê Pepy II	Pyr. Saqqâra Pyr. Saqqâra Pyr. Saqqâra Pyr. Saqqâra Pyr. S. Saqqâra

APPENDIX II

FIRST INTERMEDIATE PERIOD

Date B.C.	Dynasty	King	Location of Pyramid or other Tomb
	VII	Ibi	Pyr. S. Saqqâra
	VIII	—	} No reliable information
	IX	—	
	X	—	

MIDDLE KINGDOM

Date B.C.	Dynasty	King	Location of Pyramid or other Tomb
1989-1774	XI	Intef I-III	Thebes
	XII	Mentuhotpe I-V	Thebes
		Ammenemes I	Pyr. Lisht
		Sesostris I	Pyr. Lisht
		Ammenemes II	Pyr. Dahshûr
		Sesostris II	Pyr. Lahûn
		Sesostris III	Pyr. Dahshûr ; Tomb, Abydos
1774- ?	XIII	Ammenemes III	Pyr. Hawâra and Dahshûr
		Ammenemes IV	Pyr. Mazghûna (?)
		Sebekneferu	Pyr. Mazghûna (?)
		Khendjer II	Pyr. S. Saqqâra
		Menneferre	Pyr., locality unknown

SECOND INTERMEDIATE PERIOD

Date B.C.	Dynasty	King	Location of Pyramid or other Tomb
	XIV	Six obscure kings	} No reliable information
	XV		
	XVI		
	XVII		
			Small degenerate pyramids at Thebes (Deir Abu'l Naga)

NEW KINGDOM

Date B.C.	Dynasty	King	Location of Pyramid or other Tomb
1580 onwards	XVIII	—	Theban rock-cut tombs

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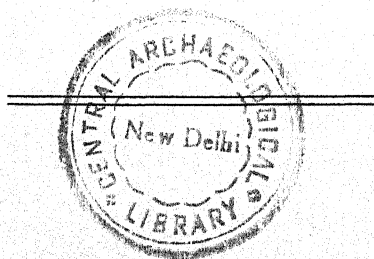
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